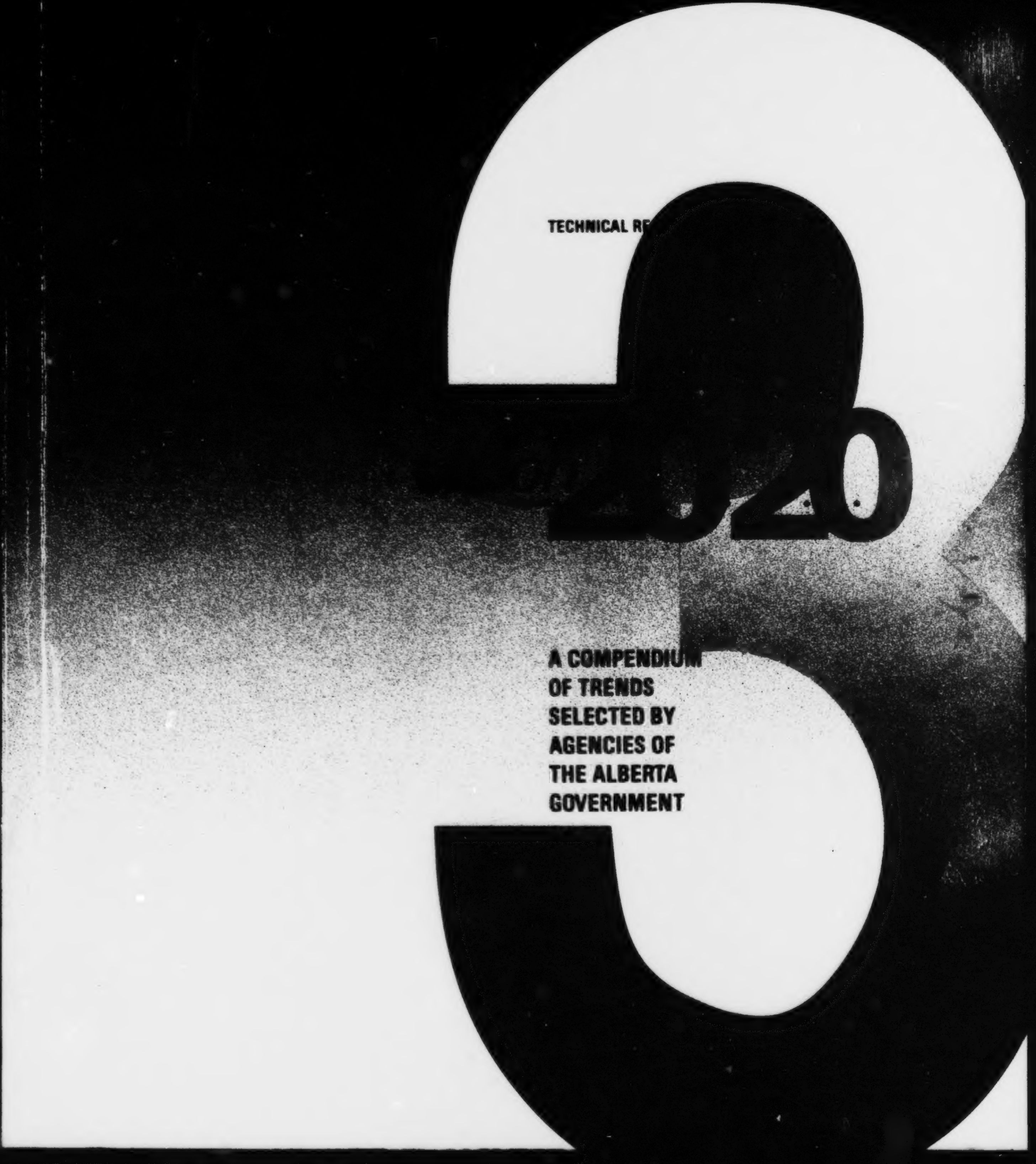

TECHNICAL RE

# 2020

A COMPENDIUM
OF TRENDS
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Page

INTRODUCTION TO A COMPENDIUM OF INTERNATIONAL, NATIONAL AND ALBERTA TRENDS i

DEPARTMENT OF ADVANCED EDUCATION 1

TRENDS TOWARDS YEAR 2000 3
A. Global 3
B. Canada 3
C. Alberta 3
D. Trends in Education 4
E. Implication for Municipalities 4

TRENDS IN EDUCATION 4
A. Demand for Education 4
B. Choice of Field of Study 5
C. Attitudes of High School Students 5
D. Attainment 5
E. Demography 6
F. Other 6

DEPARTMENT OF AGRICULTURE 7

A VISION FOR AGRICULTURE BEYOND 2000 9
A. State of the Agriculture Industry 9
B. Changing Face of Agriculture 10
C. Challenges to Beyond 2000 11

DEPARTMENT OF CAREER DEVELOPMENT AND EMPLOYMENT 13

LABOUR MARKET TRENDS: IMPLICATIONS FOR MUNICIPALITIES 15
A. Global Trends 15
B. Alberta Trends 17
C. Possible Implications for Alberta Career Development and Employment 18
D. Possible Implications for Municipalities 19

DEPARTMENT OF CULTURE AND MULTICULTURALISM 21

FUTURE TRENDS WHICH MAY AFFECT ARTS, CULTURE AND HISTORICAL RESOURCE DEVELOPMENT IN ALBERTA 23
A. Demographics 23
B. Employment 24
C. Economy 24
D. Technology 25
E. Changing Cultural Perceptions 25
F. Education 25
G. Political Advocacy 26

Contributing Agencies (Continued)

Page

DEPARTMENT OF ECONOMIC DEVELOPMENT AND TRADE 29

ECONOMIC TRENDS 31
A. Globalism and Fragmentation 31
B. Population and Settlement 31
C. Economic Production 32
D. Trade and Investment 36
E. Small Business Development 39

DEPARTMENT OF EDUCATION 41

SIGNIFICANT TRENDS AND POTENTIAL IMPLICATIONS FOR EDUCATION, 1987 - 1990 43
A. Social 43
B. Economic 48
C. Educational 51
D. Public Policy 57

DEPARTMENT OF ENVIRONMENT 59

LONG TERM ENVIRONMENTAL TRENDS 61
A. Global Trends 61
B. National/Provincial Trends 62
C. Trends Related to the Environmental Mandate 62
D. Municipal/County/Community Trends 63

DEPARTMENT OF FORESTRY, LANDS AND WILDLIFE (Land Information Services Division) 69

GLOBAL/NATIONAL/ALBERTA/MUNICIPAL/COUNTY/COMMUNITY 71

GLOBAL/NATIONAL/ALBERTA TRENDS 71

GLOBAL TRENDS 71
A. Political 71
B. Technological 72
C. Sociological 72

NATIONAL/ALBERTA TRENDS 72
A. National 73
B. Alberta Trends 73
C. Relationship to Departmental Mandate 74

MUNICIPAL/COUNTY/COMMUNITY TRENDS 74

DEPARTMENT OF FORESTRY, LANDS AND WILDLIFE (Public Lands Division) 77

GENERAL TRENDS AND TRENDS IN RENEWABLE RESOURCE MANAGEMENT 79
A. Global Trends 79
B. National/Alberta Trends 79
C. Department of Forestry, Lands and Wildlife 81
D. Municipal Trends 82

Contributing Agencies (continued)

Page

DEPARTMENT OF LABOUR 83

GENERAL SAFETY SERVICES DIVISION - GENERAL TRENDS 85
- A. Economics 85
- B. Technological Change 85
- C. Budgets 86
- D. Social Policy 86
- E. Uniformity of Standards 87
- F. Role of Government 87
- G. Awareness 88
- H. Efficiency 88
- I. Economic Change 89
- J. Complexity 89
- K. Incidents 89
- L. Cost 90

GENERAL SAFETY SERVICES DIVISION - SPECIFIC ISSUES 91
- A. Propane 91
- B. Natural Gas 91
- C. Do-It-Yourselfers 91
- D. Early Detection and Suppression of Fires in Residential and Assembly Occupancies 92
- E. Regional Fire Protection Systems 92
- F. Training/Qualification of Municipal Fire Service Personnel 92
- G. Municipal Fire Service Visibility 93
- H. Municipal Fire Protection Master Planning 93

HUMAN RIGHTS ISSUES 94
- A. Mental Disability 94
- B. Sexual Orientation 94
- C. Acquired Immune Deficiency Syndrome 95
- D. Equal Pay for Work of Equal Value 95
- E. Mandatory Retirement 96
- F. Drug Testing in the Workplace 97
- G. Affirmative Action 97

LABOUR RELATIONS/EMPLOYMENT STANDARDS/PENSIONS 98

RESPONSIVENESS OF COLLECTIVE BARGAINING TO ECONOMIC CONDITIONS 98
- A. Overview 98
- B. Compensation Issues 99
- C. Other Significant Provisions Trends 103
- D. Update on Public Sector Bargaining 103
- E. Collective Bargaining Reaction to Privatization 104
- F. Construction Industry Issues 104

GLOBAL TRENDS 105
- A. Economic Trends 105
- B. National/Alberta Trends 105

Contributing Agencies (continued)

Page

DEPARTMENT OF RECREATION AND PARKS 107

A FUTURES PERSPECTIVE 109
A. Trends 109

IMPLICATIONS FOR SPORT AND RECREATION OF SPECIFIC CHANGES 111
A. Physical Environment 111
B. Older, Longer Living Canadians 111
C. Smaller Families More Single Parent and Male Parented Families 112
D. More, More Active, Retirees and Early Retirees 112
E. More Employment in the Service Industries, More Women in the Work Force 112
F. More De-institutionalization of People with Disabilities 113
G. Higher Proportion of Immigrants 113
H. Changing Attitudes to Education 113
I. Increasing Automation 114
J. Increasing Travel and Holidays 114
K. Emergence of the Leisures/Shopping Concept 114
L. Increasing Numbers of Electronic Devices 115
M. Increasing Participation in "Risk" Sports 115

IMPLICATIONS OF CHANGE FOR POLICY 116

DEPARTMENT OF SOCIAL SERVICES 119

LONG-TERM TRENDS IN SOCIAL SERVICES 121
A. Income Support 121
B. Family Support Services 122
C. Services to the Handicapped 122
D. Child Protection Services 122

DEPARTMENT OF TECHNOLOGY, RESEARCH AND TELECOMMUNICATIONS 125

INFORMATION TECHNOLOGIES TO THE YEAR 2000 127
A. Global Trends 127
B. National Alberta Trends 131
C. Trends Related to the Mandate of Technology Research and Telecommunications 132
D. Trends Related to Municipalities and Counties 133

DEPARTMENT OF TOURISM 137

TOURISM TRENDS 139

DEPARTMENT OF TRANSPORTATION AND UTILITIES 143

TRENDS AND IMPLICATIONS 145
A. Overall Economic Growth 145
B. Oil and Gas Sector 147
C. Tourism Sector 148
D. Agricultural Sector 149
E. Forestry Sector 150

Contributing Agencies (continued)

Page

F. Demographic and Social Changes 151
G. Roadway Infrastructure and Operation 153
H. Vehicle Design and Operation 155
I. Demand for Accountability 158
J. Environmental Issues 158

# INTRODUCTION TO A COMPENDIUM OF INTERNATIONAL, NATIONAL AND ALBERTA TRENDS

This resource paper is a compilation of the material supplied by departments of the Alberta Government as part of the background information for the VISION 2020 program, "Communities Choosing Futures Today". It is a companion volume to the "Trends Guide for VISION 2020" — the main source paper for most municipalities — and sets out those trends which each department considers to be significant for their area of jurisdiction. However, the Government of Alberta, the Department of Municipal Affairs and the participating departments make no guarantee of the reliability or likelihood of occurrence of any of the trends identified in these two resource papers. These contributions do not represent government policy or policy statements.

Although certain trends will be more important for some communities, this compendium allows community leaders to refer directly to material supplied by government departments when using the VISION 2020 Discussion Guide to develop a Vision Statement and Action Plan for their community.

# DEPARTMENT OF ADVANCED EDUCATION

# TRENDS TOWARDS YEAR 2000

## A. Global

1. Intensification of a move towards a "global" economy.

2. Continued development of some form of "knowledge" and "technology based" economy in advanced industrial nations.

3. Continued uncertainty given environmental concerns and north–south gap. Sustained demographic problems with urban development and poverty in Third World.

4. Domination by major trading blocks.

## B. Canada

1. Continued tension over economic policies given imperatives of competing in world economy and the realities of differing regional economics.

2. Aging population with concerns over public expenditures on health and income security.

3. Increased attention and concern given to:

    a) life style issues – health, the family;

    b) environmental issues; and

    c) appropriate policies to foster economic growth given rapidly changing economy.

## C. Alberta

1. Continued concerns over longer term viability of natural resource economic base given uncertain and volatile world markets, the environment and impact of technology.

2. Concerns over creation of jobs and careers for young people given uncertain economy.

3. Continued urbanization.

### D. Trends in Education

1. Higher education will be increasingly valued as a route to secure employment. Post-secondary institutions, and especially universities, will assume greater importance as a source of research-based knowledge for commercial exploitation and for providing training in advanced skills.

### E. Implications for Municipalities

1. Post-secondary institutions will continue to be highly attractive to regions and municipalities. They provide a range of well-paid jobs, are non-polluting, boost local economies, help retain young people in their "home region" and provide cultural and recreational facilities. Some observers note that high quality post-secondary educational institutions are often viewed as a major factor in attracting companies when they are making location decisions.

2. Municipalities will increasingly require highly trained employees given advances in technology and as the issues they have to address become more complex. Existing employees will wish to access continuing education courses to update their knowledge.

3. Post-secondary institutions, and Alberta's wide range of regional educational networks (further education councils, community consortia) may be increasingly seen as resources of knowledge and expertise to assist in the addressing of local and regional issues.

## TRENDS IN EDUCATION

### A. Demand for Education

1. Overall demand for education continues to rise, boosted by a number of socio-economic trends.

- higher entry level job requirements;

- need for upgrading to keep pace with change;

- need for retraining to adapt to structural changes in the economy; and

- increased focus on image and marketability to enhance one's career prospects (credentialism).

## B. Choice of Field of Study

2. Shift toward programs that provide a general background and can lead to careers in a number of industries; business, law, arts and science. Increasing recognition of the key role of communication skills and creative thinking skills in the workplace.

## C. Attitudes of High School Students

3. Graduates from high school are increasingly pragmatic, explicitly targeting study that will improve their competitive advantage and marketability in the labour market.

## D. Attainment

4. Overall level of educational attainment continues to rise as each successive generation views education as a more important tool for achieving success.

5. Growing realization that one's education cannot end when one leaves high school.

6. Growing realization that completion of post-secondary level study is an advantage in itself, as completers have a significantly lower unemployment rate than non-completers and those with only high school completion.

## E. Demography

7. The above trends are more pronounced in the female population which is more likely to count on education to supply leverage for career advancement.

8. A higher level of education attracts people away from rural areas to areas where education offers more of an advantage in a career.

9. Alberta, unlike most of Canada, has a pronounced "echo baby boom", which peaked in 1983 and is still at a high level. The peak is now entering the public school system and may produce a volume almost equal to that experienced in the 1960s, depending on migration (see 11 below).

10. Shortages in other provinces of certain occupational groups such as skilled trades people and researchers may continue to attract people away from Alberta and undermine Alberta on recovery (exporting expertise?).

11. Shortages of children and young people in other parts of Canada may inspire programs to attract people from Alberta which has experienced an "echo baby boom".

## F. Other

12. What is commonly called "Life Long Learning" is caused by trends such as in items (1) to (8) above.

13. What is commonly called "increased participation rate" is caused by trends such as in items (1) to (11) above.

# DEPARTMENT OF AGRICULTURE

# A VISION FOR AGRICULTURE BEYOND 2020

## A. State of the Agriculture Industry

Agriculture is Alberta's most essential industry. It provides a livelihood for more than 56,000 farm families, and supports the dynamic rural communities that form the foundation of our province.

The indirect impact of agriculture affects more than just rural Albertans. Combined, the primary production and food and beverage industries account for more than half of Alberta's economic activity. One of every three jobs in Alberta relies on agriculture and its related industries.

Alberta produces a wide variety of agricultural commodities, but the great majority of our production is in red meat and in grains and oilseeds. Alberta has achieved an even balance between livestock and grain production, a balance that has helped greatly to strengthen and to stabilize the industry.

Alberta has a large stake in the Canadian agricultural industry. As of 1986, Alberta farms represented 38.9 percent of the prairie total, and 19.7 percent of the total number of farms in Canada. Although Alberta has only 6.9 percent of Canada's land area, it boasts 28.1 percent of the occupied and improved land.

With this land advantage, Alberta farmers produced 49 per cent of Canada's barley in 1986, 42 percent of the canola seed, 45 percent of the oats, 26 percent of tame hay and 23 percent of all wheat. In addition, Alberta farmers raised 32 percent of Canada's cattle and calves, 15 percent of the hogs, and 25 percent of the sheep and lambs. All together, this production amounted to 20 percent of Canada's total agriculture and food production.

Out-of-province shipments of agricultural products from Alberta amounted to $2.9 billion in 1986. More than half of these shipments, worth $1.7 billion, were exported out-of-country. This represents 18.4 percent of Canada's total agricultural exports.

## B. Changing Face of Agriculture

While Alberta's agriculture sector has long term strength and outstanding potential, it is experiencing fundamental changes that are causing difficulties for some farm families. Rising input costs, falling land values and a series of adverse climatic conditions are just some of the trends that have temporarily weakened the financial position of producers. Increasing competition in international markets from heavily subsidized producers and from new production sources, and the balkanization of domestic agricultural markets, have further weakened the farmer's position, and have distorted Alberta's natural production advantages.

Industry output has risen rapidly in Alberta. Between 1972 and 1985, gross farm cash receipts increased from approximately $1 billion to $4 billion. However, due to the effects of inflation and the rapid increase in costs of production, the farmer's net cash earnings have failed to keep pace with the increase in receipts.

During this same period, three distinct producer groups have emerged;

- approximately five percent of farmers produce 33 percent of Alberta's gross agricultural production. This group produces large volumes efficiently and generates sufficient net farm income for living expenses and further capital investment.

- approximately 45 percent of farmers produce 60 percent of the gross agricultural production. Net farm income of this group is supplemented by off-farm employment.

- the remaining 50 percent of farmers produce seven percent of the gross agricultural production. This group, on average, has a negative net farm income, and relies on non-agricultural sources for income.

If the present trends continue, by the year 2000, about 20 percent of all farms in Alberta will account for 75 to 80 per cent of Alberta's gross agricultural production.

Changes in agriculture in Alberta have had both economic and social consequences. Agriculture has become not just a way of life, but also a business, demanding the application of modern technology and business management skills.

What was once a low volume, high margin industry has become high volume, and low margin. The concentration of production has increased, particularly in poultry, dairy and livestock feeding enterprises.

Agriculture has become increasingly capital intensive. In Alberta, farm capital rose from $6 billion in 1972 to a peak of $37 billion in 1982, before beginning to decline. And with capital investment, farm debt has risen proportionately.

The adoption of new technology has required both high capital investment and increasingly high levels of management skill on the part of farmers. Greater volatility in world prices and annual world yields has meant increasing risks and instability at all levels of the agriculture industry.

## C. Challenges to Beyond 2000

Economic trends, the global trade and market situations and Alberta's natural advantages in agriculture clearly point to the challenges facing our province and our most important industry.

Agriculture, more than ever, functions in the global sphere. Canada and Alberta, as world traders in agricultural and food products, must remain competitive in the international marketplace.

To remain competitive, we must continue to invest substantially, in both the private and public sectors, in agricultural research and technology transfer. The exciting new work being done in such fields as biotechnology can help us become more efficient, and therefore more competitive, by increasing our productivity and reducing our costs of production.

We must continue to foster growth and development in our value-added sector, and to promote further diversification of agricultural production and processing.

We must also accept the challenges presented to us in the area of market development. We must become more responsive to changes in the marketplace and the whims of consumer demand. We must take advantage of the exciting opportunities that exist in such key markets as the United States and Pacific Rim.

We must also devote all available resources to the maintenance and responsible management of the basic natural resources from which the agriculture industry derives its productivity. The very survival of our agriculture industry depends upon our willingness to make a strong commitment to the conservation of our basic agricultural resources – soil and water.

In order for Alberta's agriculture industry to meet these challenges successfully, provincial and local governments must work together to plan for the future in close cooperation with the federal government, the private sector, farm organizations and individual producers.

# DEPARTMENT OF CAREER DEVELOPMENT AND EMPLOYMENT

# LABOUR MARKET TRENDS: IMPLICATIONS FOR MUNICIPALITIES

This paper will convey some of the emerging global trends that will significantly impact upon the Department of Career Development and Employment. As well, it will explore the likely implications these trends will have on departmental functions. Finally, some of the departmental implications will be discussed in the context of local municipalities.

At the outset of this paper, an important caveat should be noted. The following trends will be extrapolated into approximately the next three decades. Since these trends are based upon myriad variables, the extrapolated trends are subject to change, particularly the relevant demographic trends. Thus, one must exercise caution in interpreting these extrapolated trends. Nevertheless, a general consensus exists that the following trends are the most likely scenarios. However, before the trends are discussed, it would be useful to briefly describe the role of Career Development and Employment.

The Department of Career Development and Employment's role, in general terms, is to promote the development of a suitably trained workforce in Alberta in order to meet the requirements of industry and to assist the people of Alberta to obtain the skills necessary to take advantage of employment opportunities. While the role has been challenging, the future will pose further challenges for the department given the predicted trends in global economic restructuring, the rapid introduction of new technologies in the work place, and changing demographic patterns.

## A. Global Trends

Perhaps the most salient global trend is that the world economy will be subject to ever increasing restructuring. At one time, the western world, or the developed nations, enjoyed an overwhelming share of economic production. Key primary, secondary, and tertiary industries were almost completely monopolized by the western world.

Within the last few decades, however, several new economic powers have emerged and their impact upon the western world has become painfully obvious. Collectively, the new, non-western economic forces have become keen competitors in the global economy and have acted to displace or force the restructuring of several industries in the western world. Industries involved in the production of steel, textiles, and automobiles are but a few of the areas that have suffered heavy casualties. As more developing nations gain technological expertise and realize comparative advantages (most notably labour costs), the western world will face even more competition for limited markets. Because of the increased competition, nations across the globe will be forced to retrench their industrial bases and pursue other industries where their inherent advantages lie.

A major force that will exacerbate global economic restructuring will be the introduction of less inhibited world trade. While trade integration (i.e. the European Economic Community, the proposed Canadian/American free trade pact, etc.) is presently occurring, more nations will subscribe to the General Agreement on Tariffs and Trade (GATT). GATT seeks to reduce global trade barriers and enhance international trade. We can expect, then, that as trade barriers such as tariffs are eliminated and as the protection of domestic markets is reduced, global economic restructuring will become more pronounced.

Another emerging trend and a key contributor to global economic change will be the introduction of new technologies. As the western world loses traditional markets to new competitors, promising opportunities are emerging in the area of advanced technologies. The most promising fields of advanced technologies include computers, communications, advanced materials, biotechnologies and superconductivity. The western world will be particularly well positioned to take advantage of these new opportunities given their technological infrastructures.

New technologies will also be integrated into existing western industries in order to bolster efficiency and improve their competitive positions. Because increasing global competition will dictate increased efficiency, the degree and frequency of technological change will increase dramatically in the decades to come.

In sum, international competition for limited markets will become even more fierce in the decades to come. As global competition increases, economic restructuring will become more pronounced. Thus, it will become increasingly imperative that nations pursue other promising industries and integrate new technologies into existing industries in order to sustain and enhance their economies.

Demographic trends are and will be a key area of concern. While a single global trend cannot be deduced, two demographic trends can certainly be deduced for the western world, namely, the aging of the population and the continuation of low fertility rates. The most obvious implication is that as the population ages and as fertility rates remain low, the supply of labour will decrease. Since an adequate and balanced labour population is a key contributor to a nation's economic well-being, these trends will become major public policy issues.

## B. Alberta Trends

In cumulative terms, the trends discussed will have a profound impact on Alberta. The following sections will examine how these trends will impact upon the province in general and, specifically, this department and local municipalities.

Alberta has traditionally relied upon oil, natural gas, and agriculture as its main agents of economic prosperity. However, because of the cyclical nature of world demand and increased competition, our economic prosperity is largely dictated by the vagaries of international prices for our key resources. Since these resources are subject to large price swings, the province's economy is vulnerable. The recession we recently witnessed is a reflection of this fact. We have become quickly aware that our economic base is too concentrated.

In order to lessen the effects of economic concentration, the province has taken several initiatives to diversify its economic base. Industries are now emerging in areas such as biotechnology, microelectronics, material technologies, information technologies, and the tourism and forestry sectors. At the same time, new technologies are emerging that will act to improve the efficiency of existing Albertan manufacturing and resource operations. These new technologies will have to be increasingly adopted in order for Alberta to sustain its competitive position in existing industries.

## C. Possible Implications for Alberta Career Development and Employment

As the Alberta economy continues to diversify and as its existing industries adopt new, more sophisticated technologies, a much greater demand will be placed on Career Development and Employment to ensure that the labour market is equipped with the necessary skills during periods of adjustment. Our department will be concerned that workers, particularly the unskilled, displaced as a result of industrial restructuring and changing technology, will not be ignored. Thus, our department will have to ensure that appropriate training and adjustment programs are in place in order that these individuals are able to fully participate in the more sophisticated labour market of the future.

In addition, as new technologies are adopted by existing firms, illiteracy and low education amongst the unskilled will prevent firms from realizing increased productivity. Hence, greater demands will be placed upon our training resources and educational systems in order to ensure that industry has a pool of labour that has the basic requirements to adapt to the changing work place.

While the province continues to diversify, our resource based sectors will continue to be subject to cyclical demand. This problem will be compounded by increasing competition. During periods of economic contraction, many skilled workers will leave the province and this will seriously undermine our ability to meet the demand for labour during times of economic expansion. As such, our department will have to develop new, more innovative programs to retain skilled employees in the future.

Finally, because of economic and technological change, it will become increasingly necessary that both individuals and employers are equipped with accurate labour market information in order that they may make appropriate labour market decisions amid a more complicated and dynamic economy. Consequently, the department will have to place increased emphasis on ensuring that mechanisms are in place that will disseminate accurate and up-to-date labour market information.

Besides economic and technological change, demographic change will bring profound implications for the province and our department. Because Alberta, and Canada as a whole, is and will continue to experience an aging population and low fertility rates, the province will not be capable of meeting its demand for labour through national migration and natural growth.

As a result, the province will have to increasingly look to immigration as a means of preventing labour shortages. However, there will be more demands on our department to provide skills and language training as well as transitional services for the large number of immigrants.

The demographic trends will also mean that our department will have to delegate more resources to integrate traditionally underutilized labour such as natives, visible minorities, and older workers. The integration of these groups will become more and more important as the labour market tightens in the future.

## D. Possible Implications for Municipalities

Of course, these trends hold several implications for local municipalities. Because a municipality's economic strength is largely dependent upon the quality and flexibility of its labour force, municipalities have vested interests in labour market issues.

Needless to say, economic restructuring and technological change has and will continue to pervade local municipalities. Since the work place will become more and more sophisticated due to technological innovation, greater demands will be placed on local educational infrastructures. Local educational infrastructures will have to become increasingly adaptable and flexible in order to satisfy changing demand in the labour market. Economic restructuring and technological change will also mean that the local educational infrastructure will have to be upgraded and improved to satisfy changing demand.

As well, local municipalities are taking a much greater role in their local economies. For example, the number of local economic development agencies has grown sharply in the last decade in order to attract new industries and to assist existing ones. The proliferation of these agencies is in large part due to the realities of a more competitive economy. Besides their traditional roles, it will become increasingly important that these agencies take a more active role in labour market issues. For example, it is often the case that employers, particularly smaller employers, are not well informed about the merits and the necessity of increased training. Individuals, too, often lack the same information. Because of structural and technological change, it will become necessary that these agencies, in conjunction with our department, actively promote the benefits of training.

Further, since the economy will become more dynamic, accurate labour market information will become increasingly important. Local economic agencies are particularly well positioned to gather relevant economic and labour market information concerning their areas (i.e. a particular industry experiencing problems; local labour shortages, etc.). Because there will be an increasing need for this information, more formal links will have to be made between local governments and our department in order to facilitate a larger and more accurate pool of labour market information.

Finally, demographic trends will dictate that the province will have to rely on increased immigration. As such, more demands will be placed on local social and educational services to ensure that immigrants will be fully integrated in the labour market and the community.

This paper has presented the significant labour market issues of the next several decades: changes in the jobs themselves, the way that work is done and the people who do the work will present significant policy challenges to all levels of government.

# DEPARTMENT OF CULTURE AND MULTICULTURALISM

# FUTURE TRENDS WHICH MAY AFFECT ARTS, CULTURE AND HISTORICAL RESOURCE DEVELOPMENT IN ALBERTA

Public demand for cultural goods and services of all kinds is growing. Audiences for Alberta's orchestras, theatres, and festivals, attendance at museums and historical attractions, and the statistics on borrowing from our public libraries are all increasing, often dramatically. Museums, historic sites, and interpretive centres have seen their attendance triple in the last few years, and more than 2,000,000 tickets were sold in Alberta last year for live cultural performances.

Thousands of Albertans take an active apart in the activities associated with these organizations and institutions, as performers, volunteers, and board members. The economic impact of cultural and artistic activity is substantial, and is becoming better recognized.

The importance of heritage attractions within community life and as part of Alberta's growing tourism industry has increased enormously in recent years. The Provincial Government has made large expenditures in a network of museums, interpretive centres and historic sites across the province. Provincial heritage facilities are now drawing attendance of more than one-and-one-half million people each year. Just to note one important example, the Tyrrell Museum of Paleontology attracts hundreds of thousands of people and makes an impact of several million dollars per year on the economy of Drumheller.

These are developments that have occurred and will continue. There are a number of other trends that may affect us in the Province as we try to develop our culture, our tourism attractions and our economy. This paper identifies some of those trends that seem to us to have a significant potential effect, without trying to establish which are most likely to impact most strongly on us, and without trying to resolve inherent contradictions: sometimes opposing trends appear to be operating at the same time.

## A. Demographics

The baby boom of the 1950's, coupled with the declining birth rate in the 1960's and 1970's, is causing the median age of our society to rise. The average age of the population will continue to increase over the next several decades, with the 75+ age group increasing at twice the rate of the 65 to 74 group. This could lead to the development of "grey power" and a greater demand for more and different cultural services from approximately 1990 to 2010, as the "baby-boom" generation reaches its peak culturally active age. Although the number of births will probably continue to decrease, it is not expected that there will be a corresponding lower demand for services. Increased out-of-country immigration to Alberta could also impact on the types of cultural services required by clients. The current trend away from rural residency into the more urban centres in the longer term may be somewhat reversed. Such trends have a direct bearing on cultural development since involvement in the arts increases with population density.

## B. Employment

The participatory rates of women in the labour force will continue to increase. Since women have traditionally comprised a large part of the critical volunteer sector in cultural activities, this could have a significant impact on programs and services. Volunteerism is also being affected by the increasing necessity for many to work at more than one occupation. It is predicted that unemployment or underemployment in the 18 to 24 age group will remain a major problem; this could mean less disposable income for this category to pursue cultural and leisure activities while time for those pursuits is available.

## C. Economy

Long term changes in the structure of Alberta's economy may be influenced by the continued move from a national industrial and resource-based economy to an international service economy. Diminishing and restricted resources are leading to a greater demand for increased organizational accountability. This means that we must know more exactly the impact of arts and culture on the provincial economy and that the marketing of culture must be more closely tied in with local, provincial and national efforts to promote tourism.

## D. Technology

Technological change, which is increasing at an exponential rate, can affect both the art forms and public's accessibility to culture. Technology has the potential to enable many people to participate in activities that were previously inaccessible and to improve the quality of life overall. In Alberta, telecommunications can make more activities "distance independent". At the same time, however, there is a continued disparity between rural and urban access to such technology. It will be important for the Department, its clients and its partners to make the fullest use of appropriate technology if it is to reach its goals.

Although technological change can improve the work environment, the benefits of new technology are often accompanied by technological unemployment. The challenge is for employers to re-educate and re-train the work force so that workers are equipped with the necessary skills.

## E. Changing Cultural Perceptions

Differences in people's views of culture and artistic expression will increase over time. The diminished and changed significance of labour in the traditional sense will offer greater scope for other social activities, thus opening new avenues for cultural expression.

With changes in immigration, diversification in concepts and expressions of culture will grow, while traditional social frameworks of integration and institutions (e.g., church, marriage, family) will change. Cultural opportunities will be altered by the ability of mass media and technology to disseminate information on a large scale.

## F. Education

The rapid rise of socioeconomic standards in the last half of the twentieth century has resulted in higher educational attainment, more public pressure for continuous adult learning, upgrading of past learning and outlets for new learning. Greatly increased educational opportunities over a long time-span are essential in order to keep pace with change and to maximize people's opportunities for self-actualization. In addition, studies have shown that higher educational attainment results in greater general appreciation and participation in arts activities. By the year 2000, some 6,657,000 people in Canada (45 percent of the labour force) will have some post-secondary education, indicating that the potential arts audience will almost double in less than 25 years.*

In 1983, approximately 3.2 million Canadians — or one in every five — enrolled in adult education courses. Alberta has the highest participation rate in Canada, with 27 percent of all adults in Calgary and Edmonton taking at least one course in 1983. People who live in urban areas tend to participate more than their rural counterparts, women tend to participate more often than men, and professionals are the most strongly represented group.*

A greater number and proportion of the population are expected to become active in arts activities, but in different ways from the present. For example, when the relationship between education and leisure activities is examined, it can be seen that the hours spent on reading increases with education, while television viewing declines dramatically. In contrast, book reading and attendance at museums, galleries, libraries and live theatre could increase more quickly than the overall population, largely because older persons with higher levels of education - who engage in these activities more often - are the fastest growing segment of the population. On the other hand, watching television and attending sports events and films would lag behind the population growth, as these activities are patronized disproportionately by the young.**

## G. Political Advocacy

In the last decade, advocacy has become a common part of cultural and political expression. Larger segments of the population no longer automatically accept the values, goals and patterns of behaviour of the society around them, or of the organizations which they join. Currently, there is a marked growth of the strength of interest groups, a demand for a decentralization of decision making and increased pressure on service providers to respond to client groups quickly and innovatively. This is a natural result of the maturing of many cultural groups over time. Similar changes are occurring in the school system and housing. Thus, the cultural sector in the future can not only expect increased public desire for services, but probably a dramatic increase in outright demand for such services. New cultural structures at the regional and local levels may be required to meet these new demands of client groups.

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*Picot, G. The Changing Education Profile of Canadians 1960–2000. Ottawa: Statistics Canada, 1980.

**Devereaux, M.S. One in Every Five — A Survey of Adult Education in Canada. Ottawa: Statistics Canada and the Department of the Secretary of State, 1984.

# DEPARTMENT OF ECONOMIC DEVELOPMENT AND TRADE

# ECONOMIC TRENDS

## A. Globalism and Fragmentation

The world is, at one and the same time, becoming more fragmented yet drawing closer together. On the one hand, the original 51 country membership of the United Nations has swelled to 163, as former colonies have obtained political independence. In addition, instability within some regions of the world suggests that further disaggregation is possible.

The economic centres of power are similarly becoming dispersed or are shifting. Part of this is due to the breakup of empires after World War II, but a major part is due to economic development of countries outside of Europe and North America, with Pacific Asia being a region of particular note.

While this has been happening in the geopolitical sphere, the reverse has been the case with much corporate activity. The development of international trade and the rapid growth of global financial markets is now a familiar story. Multi-national firms continue to extend themselves, by merger, take-over or joint venture.

The growing range of cultural, economic and ideological differences makes the world more interesting and dynamic, while at the same time it makes concerted effort more difficult. This creates a paradox: as complexity increases, we are more and more compelled to act, however, action seems to become increasingly difficult.

## B. Population and Settlement

The basics are well known: population is growing rapidly in Less Developed Countries (LDC's) as death rates fall but birth rates remain high; population in Developed Countries (DC's) is levelling off as birth rates fall too. This is expected to result in a very youthful Third World populace and a growing proportion of elderly in DC's, although there is some evidence of a cyclical behaviour in Western fertility, which could affect the latter trend.

There are some clear implications of an aging DC population, in terms of goods and services demanded and earning capability. Less well understood are the implications of LDC growth carrying us worldwide to 6 billion souls in a little under 15 years. While the more advanced LDC's may find that this holds the prospect of a consumer demand boom as people begin to acquire the goods that Westerners take for granted, much of the increase will occur in lands where economic prospects for such activity is modest.

In terms of settlement patterns, the world's population has been urbanizing rapidly. Notable from 1950 – 1980 has been the speed with which the USSR and Latin America have gone from predominantly rural to predominantly urban societies. The mid-range projection for the United Nations sees even more dramatic change by 2025. Even by 2000, forecasts are for more than a five-fold increase in the number of cities with more than one million persons, compared with 1950. This will give rise to the need for basic infrastructure, such as transport, communications, energy and housing, which Canadians – and Albertans – are in a good position to supply.

Table 1

NUMBER OF CITIES WITH MORE THAN ONE MILLION POPULATION

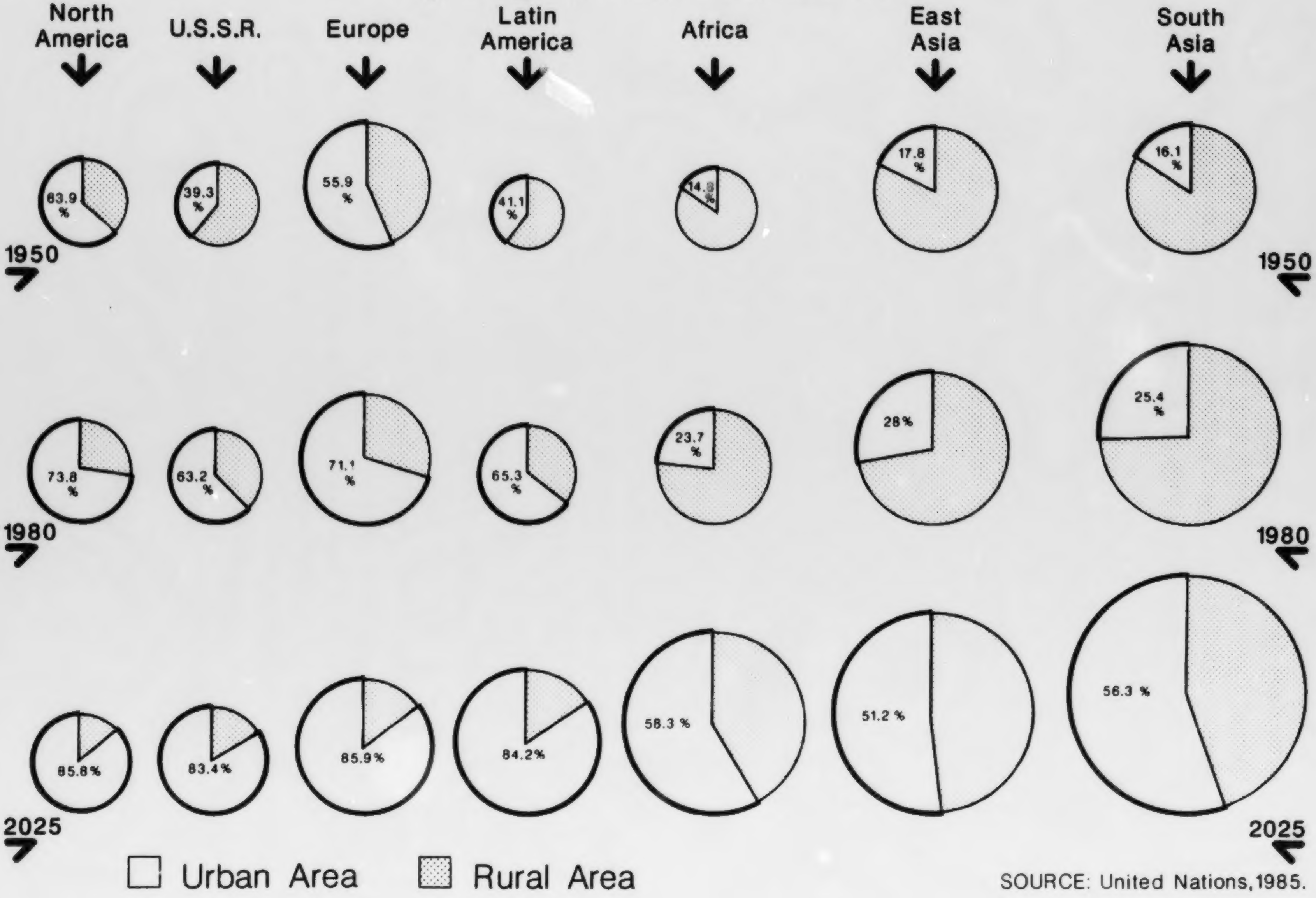
| | |
|---|---|
| 1900 | 11 |
| 1950 | 75 |
| 2000 | 450 |

Source: UN estimate

## C. Economic Production

With the economic progress since World War II has come a significant rise in incomes within OECD countries. Aided and abetted by advances in consumer credit arrangements in many countires, the consumption of material goods has advanced rapidly.

# Percentage of the Population in Urban Areas By Region, 1950, 1980, and 2025



SOURCE: United Nations, 1985.

The progress of Less Developed Countries has varied since World War II. Those in the Asian Pacific region have generally advanced, some dramatically so, although some have remained relatively stagnant in terms of growth. The Mediterranean Basin has moved rapidly forward with oil, while those lacking same have shown varying degrees of progress.

Table 2

POPULATION AND ECONOMIC OUTPUT

| | Industrial Market Economies | Developing Economies |
|---|---|---|
| Population (million) | 74 | 3,761 |
| GNP/Capita | $12960 | $ 610 |

Source: World Development Report 1988, World Bank.

Advances in personal wealth should closely track the extent of economic growth during the 1990–2010 period. Since most Western economies have their basic household goods (television, refrigerator, washing machine, etc.) it is not clear if such renewed income growth will result in a new round of purchases of consumer goods, or a greater emphasis on the consumption of cultural activities and education.

To some extent, the pattern of consumption will depend on the distribution of income within countries (those currently less–well–off will likely have a large list of unfilled material wants) and on the amount of expenditure on public goods (parks, museums, urban amenities, etc.). A similar uncertainty lies with the extent to which future commercial applications of technology will be directed at the consumer or at infrastructure and industrial goods and services.

The available markets for the services, manufactures and resources that have been the source of post–war growth are showing signs of maturation. Symptoms

## Table 3

## NATIONAL SHARES OF WORLD GROSS NATIONAL PRODUCT

| Region and country | 1960 | 1980 |
|---|---|---|
| | (Percentages) | |
| North America | | |
| Canada | 2.6 | 2.1 |
| U.S.A. | 33.4 | 22.4 |
| Total | 36.0 | 24.5 |
| South America | | |
| Mexico | 0.8 | 1.0 |
| Brazil | 1.6 | 2.0 |
| Other countries | 2.5 | 2.2 |
| Total | 4.9 | 5.2 |
| Western Europe | | |
| United Kingdom | 4.7 | 3.3 |
| France | 4.0 | 5.0 |
| West Germany | 4.7 | 6.7 |
| Other countries | 8.6 | 11.7 |
| Total | 22.0 | 26.7 |
| Eastern Europe | | |
| U.S.S.R. | 15.0 | 13.0 |
| Other countries | 4.1 | 4.5 |
| Total | 19.1 | 17.5 |
| Africa | 2.2 | 3.0 |
| Asia (market economies) | | |
| Japan | 2.8 | 10.1 |
| East Asian countries | 0.5 | 0.9 |
| Southeast Asian countries | 1.5 | 1.3 |
| Other countries | 4.7 | 4.6 |
| Total | 9.5 | 16.9 |
| Asia (socialist economies) | | |
| China | 4.7 | 4.6 |
| Other countries | 0.3 | 0.3 |
| Total | 5.0 | 4.9 |
| Australasia | 1.3 | 1.3 |
| WORLD | 100.0 | 100.0 |

Source: The Japan Times Ltd., Japan in the Year 2000. Tokyo. 1983.

globally include: over–capacity, low or unstable prices and an emphasis on cost reduction as a way of becoming more competitive.

Expectations are high for the potential of three families of technology to yield new profitable industries and/or re–invigorate those that are mature:

- micro–electronics (other micro technologies too: light; ultra–sound);
- life sciences and bio–chemistry; and
- new materials (both organic and inorganic; new creations and reformulation of traditional materials).

## D. Trade and Investment

The proportion of world gross domestic product accounted for by trade is clearly rising, as Table 4 indicates.

Table 4

PROPORTION OF WORLD GDP
ACCOUNTED FOR BY TRADE

| | YEAR | | |
|---|---|---|---|
| | 1960 | 1985 | 2000(Forecast) |
| Global | 11.0% | 18.0% | 21.0% |
| North American | 6.3% | 13.5% | 16.9% |

Source: Japan Economic Research Centre "Maekawa Report"

International trade represents a key component of Alberta's economic activity and accounts for 21 percent of the province's gross domestic product. In 1987, Alberta exported approximately $11.9 billion worth of goods and services. This accounted for 10 percent of Canada's exports.

The province continues to rely on exports of primary products as production levels exceed the requirements of the domestic population. Secondary products are playing increasingly important roles as the provincial economy has diversified into new areas of activity, from high technology to high fashion. Alberta is committed to maintaining open markets and is capable of competing globally.

Alberta companies are currently exporting to over 140 countries around the world. The top five commodity exports are crude petroleum, natural gas, sulphur, wheat and coal. The United States remains the primary desination, representing 71.8 percent of total exports in 1987. Exports to East and West Europe have exhibited strong growth in recent years, increasing from 4.6 percent to 7.3 percent of total exports between 1986 and 1987. The Asia/Pacific Rim market received 13.8 percent of Alberta exports in 1986. If oil/gas and petroleum liquids are excluded from export figures, it is apparent that trade with major Pacific Rim partners has risen dramatically over the past few years. This is the case with South Korea, and particularly for China whose share of Alberta non-petroleum exports is nearly equivalent of that of Japan.

Table 5

ALBERTA EXPORTS
BY MAJOR COMMODITY GROUPS

| COMMODITY GROUPS | 1976<br>% | 1985<br>% | 1986<br>% |
|---|---|---|---|
| Grains* | N/A | 8.5 | 9.5 |
| Live Animals | 0.5 | 0.8 | 1.1 |
| Food, Beverage | 1.6 | 2.2 | 4.1 |
| Crude Materials | 83.5 | 66.9 | 61.0 |
| Fabricated Materials | 12.0 | 18.8 | 20.2 |
| End Products | 1.8 | 2.6 | 3.9 |
| Other | 0.3 | 0.3 | 0.3 |

*Wheat, Barley, Canola, Flaxseed

Source: Statistics Canada, prepared by Alberta Economic Development and Trade

Alberta's average employment totalled 1.14 million in 1987. The pattern of employment reflects some of the success in diversification. The composition of the total employed labour force was energy and agriculture 14 percent, community business and professional services 33 percent, wholesale and retail trade 18.7 percent, manufacturing 7.8 percent, transportation and communications 8.1 percent, and construction 6 percent.

Table 6

ALBERTA EXPORTS TO WORLD REGIONS – 1985 – 1987

| | 1985 $'000 | % | 1986 $'000 | % | 1987 $'000 | % |
|---|---|---|---|---|---|---|
| United States | 10,505,744 | 77.2 | 7,601,533 | 71.8 | 8,612,570 | 72.0 |
| Asia/Pacific Rim | 1,703,158 | 12.5 | 1,459,246 | 13.8 | 1,894,100 | 16.0 |
| Europe (East & West) | 624,248 | 4.6 | 773,603 | 7.3 | 576,530 | 4.8 |
| Middle East/ North Africa | 361,517 | 2.7 | 337,589 | 3.2 | 199,217 | 1.6 |
| Latin America | 310,115 | 2.3 | 310,995 | 2.9 | 378,321 | 3.1 |
| Africa | 101,222 | 0.7 | 73,366 | 0.7 | 309,344 | 2.5 |
| Other | 1,296 | 0.0 | 29,233 | 0.3 | --- | 0.0 |
| TOTAL | 13,607,300 | 100.0 | 10,585,565 | 100.0 | 11,973,953 | 100.0 |

Source: Statistics Canada, Prepared by Alberta Economic Development and Trade

In the last decade, the international flow of capital both in terms of direct foreign investment (e.g. acquisition of foreign firms, establishing new firms, joint ventures, etc.) and foreign portfolio investment (e.g. government bonds, stocks, etc.) has increased. This has been due to several factors such as: (1) recycling of trade surpluses from creditor countries to debtor countries; (2) direct investment by Western nations into developing economies to open up new markets; and (3) direct investment to establish global production and distribution networks. Foreign direct investment has been mainly carried out by large multinational corporations but now it is spreading into medium-sized companies as well.

Foreign direct investment is expected to increase as a major means of globalization of economic activities, transferring capital, technology and management skills from country to country. It is now being treated as a major component of economic development and diversification strategies around the world. Canada is active both in terms of attracting such investment and in making its own elsewhere, which is characteristic of an open economy.

## E. Small Business Development

Small businesses are major contributors to job creation. Firms with less than 50 employees contributed 76 percent of the net change in private sector employment in Canada between 1978 and 1986. In 1986, approximately 39 percent of Alberta's labour force worked for firms which employed fewer than 100 people.

The number of small businesses also continues to increase at a significant rate. In the period 1978–1986, the number of Alberta firms with less than 20 employees increased by more than 57 percent.

In 1987, Alberta had 17,039 business incorporations which is a 5.2 percent increase over 1986 incorporations, an average of 1,420 incorporations per month. There were 11,195 incorporations between January and September 1988.

# DEPARTMENT OF EDUCATION

Extract from
"Alberta Education Directions to 1990"
[Alberta Education, Planning and Policy
Secretariat, 1987]

# SIGNIFICANT TRENDS AND POTENTIAL IMPLICATIONS FOR EDUCATION: 1987 – 1990

| TRENDS | IMPLICATIONS FOR EDUCATION |
|---|---|
| **A. SOCIAL** | |
| 1. **Changing Demographics** | |
| Population: During the 1987–1990 period, the population of Alberta is expected to grow by 4.2% or 100,916. The average annual growth rate will be about 1.0%. The 5–9 age group will grow by 9.0% or 17,000; the 10–14 age group will grow by 4.3% or 7,500; and the 15–19 age group will decrease by 3.1% or 5,700.<br>School enrollments at the elementary level are expected to increase by 9.4%, and at the junior high level by 4.4%. Enrollment at the senior high level is expected to decline by 2.0%. This decline may be offset by students staying in school longer because of difficult economic times, and by adults returning to school to upgrade their skills and knowledge. | School facilities, funding, program delivery and staffing will be variously affected by the increase in elementary and junior high school enrollments and the decline in senior high school enrollments. |
| The Elderly: The proportion of elderly people in Alberta's population is increasing. Presently, 11.5% of the population is over 60. By the year 2,000 this percentage will grow to 12.4%. | Research evidence suggests that the cost of supporting an elderly population is significantly greater than the cost of supporting the school–aged population. Education may have to prove its worth relative to other social service priorities, especially during an era of fiscal restraint. |
| Rural/Urban Migration: There will be continuing migration from the rural areas to the urban centres. Alberta's rural population will decline from 23% in 1981 to less than 14% in 2001. | There may be an increasing perception by rural parents and other educational interest groups that program inequities exist between urban and small rural schools.<br>A review of rural education may be necessitated by the lower rural population base, closure of small schools, declining enrollments, and reduced revenues/resources. |

| TRENDS | IMPLICATIONS FOR EDUCATION |
|---|---|
|  | Boards of rural jurisdictions with reduced enrollments may have increased difficulty providing a comprehensive range of programs - core, complementary and special interest courses. Schools in these districts will likely focus on the core curriculum.<br>There may be a need to develop more flexible and efficient ways of using school buildings (e.g., using school space/empty classrooms for adult programs, distance learning activities, community activities). |
| Immigration: International immigration will continue to increase moderately. | The increasing multicultural nature of Alberta society may impact on education. For example, schools may need to give more attention to cross-cultural education, second languages, and the cultures and lifestyles of the countries in the Pacific Rim, and other nations with which Alberta has economic ties. |
| **2. Changing Family Structures** |  |
| Size of Families: The number of children per family is decreasing and the number of families without children is increasing. At the height of the post-war baby boom, there were nearly four births per woman. By 1983, the birthrate had fallen to an all-time low of 1.7 births per woman, and this decline is expected to continue. | Parents will have a shorter period of contact with schools. This has implications for parental involvement with schools. There may also be a greater need for schools to develop more focused communications with parents in order to improve involvement. |
| Single Parent Families: The number of single parent families is increasing. Alberta has the nation's highest percentage of single parent families (10%), and this proportion is expected to increase at a rate of 1% every five years under current conditions. One-half of all single parent families have incomes below the poverty line as defined by Statistics Canada. A recent study reported that students from single parent families make up 33% of Edmonton's inner-city school population. | Programs to improve teacher understanding of the needs and problems of single parent families may need to be considered.<br>More families may request both day- and after-school child care programs for children of school age. For example, a 1985 survey in Calgary indicates that 64% of single parents require before school, lunch, and after school care. Additional costs may be incurred to accommodate children requiring care during non-instructional hours. Also, child-care and |

| TRENDS | IMPLICATIONS FOR EDUCATION |
|---|---|
| | other social services may compete with education for available public resources. |
| There is an increase in the divorce rate. More than 55% of all marriages fail in the first four years and this contributes to Alberta having the highest divorce rate in the country. | There may be an increasing need for special services such as psychological counselling in schools. |
| Women in the Work Force: The expansion of employment options and opportunities for women has contributed to the increased number of families where both parents are working. In 1981, 51% of married Canadian women participated in the labour force, compared with 33% in 1971. A recent federal study on Canada's future labour market development predicts that 75% of all women between the ages of 25 and 54 will be in the job market by 1990. Currently, Alberta has the highest percentage of working women in Canada (61%). | The increased participation of women in the labour force will result in more women being available for recruitment into the teaching profession and other occupations.<br>It may be necessary to include in the school curriculum some course information about the changing roles and career opportunities available to women. It may also be necessary to review and eliminate sex-role stereotyping from the learning resources used in Alberta's schools, and to encourage female students to consider the expanding range of career alternatives available to women. |
| **3. Spread of AIDS** | |
| The rapid spread of Acquired Immune Deficiency Syndrome (AIDS) is developing into a major health problem, and public concern about this terminal disease is increasing. In particular, concern is growing in the public school system because of pronouncements by public health specialists that sexually active teenagers will be the next AIDS "high risk" group. | There will be increased pressure from some parents, health authorities, and other interest groups for an AIDS education program in the public schools. What children are taught about AIDS in the schools will continue to raise troubling, and often controversial moral questions, and will give new urgency to the debate about the role of the school in providing sex education. |
| The federal Minister of Health estimates that some 50,000 Canadians have been exposed to the AIDS virus and between 20 and 35 percent may develop the disease. University of Alberta epidemiologist, Dr. Colin Soskone recently estimated that there are as many as 4,600 Albertans carrying the AIDS virus. | It will be necessary for government authorities, school boards, parent/community groups, and health authorities to cooperate in designing an appropriate AIDS education program for the public schools. |

## 4. Knowledge Explosion

| TRENDS | IMPLICATIONS FOR EDUCATION |
|---|---|
| Changing Knowledge Base: Current research shows society's knowledge base is doubling every 5.5 years. This rate of change is expected to continue. | Teacher and administrator training programs may need to be reviewed in recognition of ever-changing knowledge. As well, there is a continuing need to assess whether curriculum changes reflect current knowledge, particularly in science, social studies and vocational education.<br>The role of some teachers may need to be reshaped to enable these teachers to help students learn "how to learn". Knowledge specialists may need to be used to assist in teaching subject areas undergoing rapid changes.<br>There are increased opportunities to develop, produce, and market innovative learning materials. |

## 5. Technological Advances

| TRENDS | IMPLICATIONS FOR EDUCATION |
|---|---|
| Schools: The use of computer and electronic technology for educational and administrative purposes will continue to increase. A 1986 Alberta Education study reported 93.2% of Alberta's schools have one or more microcomputers, resulting in a provincial student-computer ratio of 17:1, the lowest in the country, and the fourth lowest in North America. | There is a need to determine to what degree computers really make a difference in the quality of instruction and learning outcomes.<br>As computer technology becomes more widely available to schools, some upgrading may be needed to alleviate possible shortages of computer literate educators.<br>The educational system may use technology to enhance the equity of educational opportunities for students, especially in remote areas. Because school districts have differential access to computers, some inequities may initially emerge in the use of technology.<br>There is a continuing need to review and evaluate hardware and software, licensing agreements, and maintenance and upgrading policies in order to determine which products are most appropriate for educational and administrative purposes. |

| TRENDS | IMPLICATIONS FOR EDUCATION |
|---|---|
|  | Standards may be required to improve the technological compatibility between school and Alberta Education, thereby facilitating movement towards an integrated electronic information processing network.<br>Provision must be made for space and other facilities that will be required by computer technology.<br>Security of information and student records may become an increasing concern for school administrators and Alberta Education. |
| Homes: The number of Alberta school children with both video-cassette recorders (VCRs) and computers at home is increasing. For example, a 1986 Alberta Education Communications Corporation (ACCESS) study reports that 61% of full-time Alberta Correspondence School students have VCRs at home, and 32% have computers.<br>A May 1986 survey indicates that the proportion of Canadian homes with VCRs increased from 23.4% in 1985 to 35.1% in 1986. Some 39.5% of Alberta households have VCRs, the highest of all Canadian provinces. In 1983, only 6.4% of Canadian households had a VCR. | With computer and information technologies more widely available in Alberta homes, there are more opportunities for diversified learning situations, such as using technology to enhance Alberta Correspondence School services and other distance education. Additionally, schools may need to examine more effective ways to integrate technology in homes with school-based technology. |
| Industries: Canadian businesses and industries are becoming increasingly computerized. In a recent survey, three-quarters of all Canadian establishments reported the introduction of some computer technology during the first half of the 1980's. | There may be a demand that the school systems integrate computers more rapidly into the curriculum, especially in vocational courses. Technological changes in innovative companies have resulted in a need for new or substantially altered vocational skills. |

## B. ECONOMIC

### 1. Economic Instability

| TRENDS | IMPLICATIONS FOR EDUCATION |
|---|---|
| Provincial Economy: Many current economic indicators forecast an unstable economic environment: declines in oil and gas revenues, in commercial and housing investments, in the price of agricultural products, and reductions in Alberta's exports to the U.S.; increasing total Provincial government debt (budget deficit is estimated to be about $3 billion); increase in the trade and service sectors but decrease in the industrial sector; and uncertainty over free trade with the U.S.<br>Alberta's resource royalties declined from $4.3 billion in 1985 to about $2.5 billion in 1986, significantly contributing to the 20% total reduction in provincial revenues. A 60% drop in oil prices has drained the province of $10 billion worth of economic activity.<br>A 1986 Conference Board of Canada report notes that although Alberta's output will expand in 1988, a real growth of only 0.6% is predicted.<br>A 1986 study by the Alberta Energy Resources Conservation Board forecasts crude oil prices to recover in the 1990's. Alberta will once again experience healthy economic growth averaging about 2.4% per year in the 1990's. | Decreased economic activity in Alberta will result in lower revenues and budgetary and fiscal restraints, affecting the funding for education in the Province. Reduced revenues will be reflected in suspension of selected programs, and may affect teacher salaries as well as the implementation of new or revised programs.<br>The educational system will be expected to be more efficient, effective, accountable, and results oriented in order to manage restraint.<br>School boards may need to be more innovative in managing provincial grants and local revenue to support educational programs and services.<br>Some small jurisdictions may need to reassess their educational programs, and may need to examine suspension of non-core programs, resource sharing with other jurisdictions, and boundary reviews.<br>Education may become more politicized as interest groups seek to affect educational policy under current economic conditions.<br>Traditionally, the service and trade sectors have had comparatively lower educational requirements for employment. As these sectors continue to grow, students may leave school earlier to take jobs with these industries. Alternatively, the service and trade industries may raise their educational requirements for employment and these would encourage students to continue their schooling. |
| Growing National Deficit: There are growing Canadian and U.S. government budget deficits. The Canadian deficit reached $38.2 billion in 1985. The U.S. deficit reached $220 billion by the end of 1986. | The growing Canadian and U.S. deficits may have a negative impact on the Alberta economy (e.g. loss of potential investors, business taxes, loss of exports). Also, federal government economic restraint measures may affect some transfer payments to the province. |

| TRENDS | IMPLICATIONS FOR EDUCATION |
|---|---|
| Conflict in the Persian Gulf: There is an increasing concern among international oil specialists that an escalation of the Iran-Iraq war could cause a shift in the world supply of oil, and consequently, unsettling movements in price. If the war escalates it may cause a disruption in the supply of oil from the Gulf, and oil prices could be driven sharply higher. If hostilities cool and exports from the region increase, prices could be forced down sharply, compounding the problems caused by the lower oil price of 1986.<br>Currently, there is speculation that the oil cartel is considering to set oil prices at less than $20 U.S. per barrel. | As the health of the provincial oil sector rests largely on the activities of the international oil market, the events in the Persian Gulf will be a critical factor in the strategic planning and policy decisions of government and business leaders. |
| **2. Employment/Income Patterns** | |
| Unemployment: Alberta's unemployment rate increased from 3.9% in 1981 to 11.2% in 1984. Unemployment was 10.8% in January 1987. In Alberta's cities, it was over 12%. Across Canada the rate was 9.7%. The working-age population in Alberta is growing, making it difficult to reduce the unemployment rate. Albertans 15-24 years of age are experiencing the most job losses. In January, 1987, the unemployment rate for this age group was 17.2%. | Continuing unemployment, competition for jobs requiring limited skills, and higher post-secondary entrance requirements may cause students to stay in school longer, thus increasing the demand for programs and services.<br>Parents and students will be increasingly concerned about their future economic livelihood, the types of jobs that will be available to students, and the role of schools in preparing students for the changing economic environment. |
| Poverty: A 1985 National Council on Welfare report on Poverty in Canada noted that the family poverty rate in Alberta, which in 1981 at 8% was the lowest in the country, had doubled to 16% by 1984. In 1982, the latest year for which these figures are available, Alberta's 154,500 working poor under age | The increasing poverty rate will result in more children coming from homes where incomes are below the poverty line. More school-based programs in remedial education and counselling services may be needed to deal with increasing numbers of children with special needs. |

| TRENDS | IMPLICATIONS FOR EDUCATION |
|---|---|
| 65 represented 59% of all low-income people in the province. The national average was 44%.<br>The number of Albertans on social assistance is increasing with corresponding increases in costs. In 1986, there were 65,390 social assistance cases, involving about 144,000 Albertans. The number of social assistance cases increased by 3.2% as of the first half of January, 1987, bringing the total to 67,456. Increased numbers are forecast if the current economic situation continues. As well, further declines are expected in the personal disposable income of Albertans as a result of the province's employment situation. | If economic instability continues for the next few years, it will aggravate the income disparities between those who earn incomes from employment and those who must depend on government support. Provincial revenue shortfalls and expenditures for social assistance and other social services may impact the level of funding support for education.<br>The fiscal capacity of the government and local agencies to generate tax revenues and to fund and support educational programs and services will be affected by the increasing number of Albertans whose personal incomes have declined or who are receiving social assistance. |
| **3. Economic Restructuring** | |
| There is a shift to a new economic structure, with new processes, new products, accompanied by increased world competition. | The shift to a new economic structure will require an emphasis on new occupational skills. There will be an increase in the rate of skill obsolescence as job restructuring accelerates. Rapid change has increased the need for Canadians to be more flexible and adaptable, as well as more competitive internationally.<br>There may be a need for increased emphasis on entrepreneurial skills in the school curriculum. |

## C. EDUCATIONAL

### 1. Cost of Education

Expenditures: There has been a steady increase in education expenditures in Alberta. The total expenditure per student increased from $2,955 in 1981 to $4,085 in 1985, an increase of 38% or 7.6% annually.

There may be increased public and professional scrutiny in regard to receiving value for public funds expended. As a result, there may be a need to determine the relationship between increased funding and improved educational results (e.g., student performance).

Opportunities exist to find innovative and cost-effective ways of improving the quality and efficiency of education (e.g., possible increase in use of paraprofessionals in the classroom).

There may be increasing concern regarding provincial/local share of total educational costs.

Revenues: There has been a steady increase in the revenues collected by Alberta's school jurisdictions from sources such as book rentals, transportation fees, and tuition fees from non-resident students. Total revenues collected increased from $79.5 million in 1982-83 to $89.6 million in 1984-85, which is about 5% of total operating revenue.

There may be more need and opportunity for joint ventures between the public and private sectors to raise revenues and/or to provide for alternative educational programming.

Under current economic conditions, the impact of increasing the local property tax will need to be reviewed carefully.

### 2. Teacher Demand and Supply

Demand/Supply: Demand for additional teachers in Alberta was initially estimated to increase during the forecast period. However, in this period of general economic restraint, the demand may be less than anticipated. A reduction in educational expenditures may affect the overall demand for teachers.

The current oversupply of teachers will likely be marginally reduced over the next four years.

Teacher shortages in certain subject areas may require a review of accreditation for out-of-province teachers.

There may be a need to use subject matter specialists (e.g., French Language) to teach, with modified preserve requirements.

| TRENDS | IMPLICATIONS FOR EDUCATION |
|---|---|
| Teacher shortages may continue in some subject areas (e.g., French, Mathematics, Special Education). | |
| Teacher Characteristics: The teaching profession is aging. The average age of teachers in Alberta increased from 36.1 years in 1975–76 to 38.2 years in 1985–86. | There may be significant increases in early retirements and pension payouts. |

## 3. Teacher Wage Settlements

| TRENDS | IMPLICATIONS FOR EDUCATION |
|---|---|
| During the 1981–85 period, teacher salaries in Alberta increased by an average of 10.5% annually. Salary increases ranged from about 12% in 1981 and 15% in 1982, to about 2% in 1984 and 4% in 1985. Recent salary settlements are in the order of 4% in 1987 and 2% in 1988. A 1% increase in teacher's salaries across the province would require an additional $12 million. | Because of government and school jurisdiction initiatives to manage restraint, there may be pressure to reconsider 1987–88 settlements. Settlements for 1988–89 and 1989–1990 may also need to reflect the current economic situation.<br>Some school boards may re–examine the grid system which guarantees annual salary increases in some teacher contracts.<br>Teacher strikes/labour unrest may be possible as school boards respond to reduced educational revenues, and may put pressure on the relationship between teachers and boards.<br>Some teachers may challenge the legality of teacher lay–offs if these appear to be unfair/improper dismissals. |

## 4. Teacher Self–Governance

| TRENDS | IMPLICATIONS FOR EDUCATION |
|---|---|
| The Alberta Teachers' Association will continue to lobby for more self–governance for the teaching profession. | The Alberta Teachers' Association may lobby more vigorously for public support to maintain and/or increase the professional and economic status of teachers in the light of current economic conditions.<br>There may be a need to establish new credentials for superintendents and other educational administrators. |

| TRENDS | IMPLICATIONS FOR EDUCATION |
|---|---|
| **5. Private/Independent Schools** | |
| The number of independent private schools is growing. The number of private schools in Alberta increased from 116 in 1982 to 153 as of September, 1985, and may continue to increase modestly. Selected groups of parents will continue to regard private schools as a viable and preferred alternative to the public school system. A recent survey reported 34% of Albertans would send their children to private schools if it did not cost more. | The current funding of private schools on a partial basis is accepted by the public. There may be more pressure from parent users to increase provincial funding levels of private schools. If Alberta Education provides more funding to private schools under current economic restraint conditions, there may be increased resistance from the Alberta Teachers' Association and the Alberta School Trustees' Association. |
| In 1984-85, funds were provided to school boards for 55 home schooling students in Alberta. In 1986-87, it is estimated that school boards will be applying for funding for about 360 to 400 home schooling students. | There is an increased demand for home schooling but the number of students overall remains small. |
| **6. Content of Education** | |
| Curriculum Content: The public debate about school reform continues: what is the role of school in society; what is adequate education; what should schools teach, particularly in times of economic and social change. | There is continuing difficulty in developing and implementing an appropriate curriculum to satisfy all interest groups. In times of economic restraint, there may be a need to reconsider the range of programs offered by schools. |
| Special Education: An increasing proportion of Alberta's education budget has been allocated to special needs programs. | There may be a need to review in what ways the level of program funding for special education may impact the ability of the educational system to offer quality "core" or "basic" education to the majority of students. |
| Instruction: The demand for individualized instruction and the teaching of moral values and job-related skills remain strong and could increase. | There is potential to use technology, para-professionals, and content specialists to assist in providing instruction. |

| TRENDS | IMPLICATIONS FOR EDUCATION |
|---|---|
| **7. Language Programs** | |
| A rising student interest in languages and the growing number of immigrant children in Alberta's urban public schools have increased student enrollments in second/foreign languages. For example, the Calgary Separate School Board has identified about 40 countries of origin of students in the separate school system. Some 365 immigrants were taking English as A Second Language classes in 1986–87, up from 273 in 1985–86. | The rising student interest and increased enrollments in second/foreign language programs may increase the demand for more language programs and qualified language teachers. |
| There is a continuing demand for the provision of instruction in French and French Language Programs. | There may be funding implications if additional programs and services are provided in French. There may also be a need for additional French Language teachers. |
| University of Alberta entrance requirements in the Bachelor of Arts program are placing increased emphasis on a second language. As of May, 1989, student will not be admitted to the Faculty of Arts with a deficiency in a second language. | The more stringent University of Alberta entrance requirements may result in increased student demand for second language programs. Some students may return to high school to acquire a second language credit or to make up a deficiency in a second language. |
| **8. Demand for Accountability** | |
| Public expectations and demand for accountability, and for receiving value for public funds expended on education, appear to be increasing. | Reporting and communicating educational results effectively to the public may become a major vehicle to demonstrate accountability. |
| Parents, guardians, and students are using the courts more to force the school system to be more accountable, and to codify rights to education in statute law. | Increased litigation may impact on educational access as more parents demand that all educational programs become fully accessible to their children. |
| | There is a need to continue improving evaluations, including student, teachers, program, school, and school system evaluations, in order to improve the accountability of the educational system. |

## 9. Public Participation and Support

| TRENDS | IMPLICATIONS FOR EDUCATION |
|---|---|
| Participation: There appears to be a continuing demand by parents for participation in educational decisions, especially at the school level. One outcome of this interest is that more school boards are conducting community surveys to determine public satisfaction and confidence. | There may be more opportunity for educational agencies to conduct community surveys and to develop improved reporting mechanisms.<br>There may be a need for increased public participation, and for more partnerships involving the public and other education stakeholders in educational decision-making. Consequently, educational agencies may need not only to review the public consultation process to improve participation, but also to ensure they maintain a capacity to respond quickly to issues requiring more immediate resolution.<br>Some training may be needed to help teachers learn how to encourage and manager parent/community involvement for the benefit of students. |
| Support: A 1986 survey indicates Albertans have a generally positive view of the educational system, and are willing to support quality education. Fifty-three per cent (53%) of Albertans surveyed feel that education is better now than 25 years ago, compared to the national average of 42%, but support decreases with age. | School boards and educational institutions may need to seize the opportunity to capitalize on this reservoir of support, and to do even better. |
| There is an increase in the number of urban taxpayers with no children in school. For example, a 1985 study by the Calgary Board of Education found 70% of taxpayers in Calgary have no children in school. | A positive response by the educational system to this period of restraint has the potential to improve the support from families with and without school age children. |

## 10. Adult Education

| TRENDS | IMPLICATIONS FOR EDUCATION |
|---|---|
| Basic Adult Education: In 1981, the Canada census indicated there were 239,000 Alberta adults over the age of 15 | An organized adult student population may emerge that could demand more adult education programs and services. |

| TRENDS | IMPLICATIONS FOR EDUCATION |
|---|---|
| and out of school who had not completed Grade 9. A 1984 survey indicated 13 percent of Alberta adults had less than Grade 8. | |
| Employability: The number of adults requiring basic education programs is growing as a result of Alberta's economic situation. To compete successfully in the changing job market, more adults are going back to school to upgrade their skills and knowledge. Alberta has the highest adult education participation rate (30%) - for all levels of education - in Canada.<br>Increased numbers of people are making career changes. One recent estimate is that individuals will make up to four different career changes during their lifetime. This may increase in the future. | Basic adult education programs (e.g., upgrading, literacy courses for illiterate adults) could face modification because of economic restraints.<br>The opportunity exists for greater cooperation among learning institutions and government departments to address the educational needs of adults. |
| Private Schools: There are increasing numbers of privately owned schools in Alberta competing with the public education system to meet adult retraining requirements. | The potential exists for the private sector to develop partnerships with the public or private education sectors to provide training to meet changing job requirements. |

## D. PUBLIC POLICY

### 1. Canadian Charter of Rights and Freedoms

The Charter guarantees Canadians basic rights and protection from discrimination in areas such as age, race and sex. Since 1982, the Charter has been used for nearly 2,000 Court challenges to demand right of access to education, language, and minority programs.

Students, parents, and guardians will be using the courts more to challenge policy decisions and rulings pertaining to education. Consequently, school boards, government and educational institutions may be going to the courts more, adding legal costs to current educational expenditures. Suits will either heighten awareness of Charter issues and/or prompt positive action to prevent continuing challenges.

As a result of Charter challenges, there may be a demand for educational systems to provide a greater diversity of educational programs.

Court rulings may affect a significant number of Acts, regulations and policies, as well as other issues such as defining special education, and the rights of special needs students to programs and services.

More staff training may be needed for teachers and administrators to ensure that dealings with students and staff follow natural justice and are not discriminatory.

There will be major funding implications if additional educational services are required for French language students and handicapped groups. For example, educational agencies may need to hire additional bilingual staff and provide more services in both official languages.

There may be an increasing emphasis on the rights of students (e.g., students' demand for access to all personal records).

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### 2. Alberta Government Policy Directions

The key directions are:

- reducing the budget deficit;
- reducing the size of government;
- diversifying the economy;

It will be necessary to suspend, modify, or eliminate some existing programs and services in order to maintain essential programs and to implement initiatives to improve the quality of education.

| TRENDS | IMPLICATIONS FOR EDUCATION |
|---|---|
| – making the oil and agricultural sectors viable; and<br>– creating jobs for Albertans. | There will be a reduction in the size of Alberta Education, and selected Departmental functions may be privatized.<br>There will be modifications in overall governmen service, resulting in more departments downsizing and becoming more efficient to offse budgetary restrictions. |

# DEPARTMENT OF ENVIRONMENT

# LONG TERM ENVIRONMENTAL TRENDS

This forecast of long term environmental trends outlines global, national and provincial trends and suggests how these may affect municipalities. Environmental issues frequently transcend geographical and political boundaries and will require cooperation, coordination and commitment from all levels of government if they are to be effectively addressed.

## A. Global Trends

Public awareness and concern about environmental issues will continue to increase. Forecasts of global trends point to rapid population growth in urban centres and increased industrialization. There will be a need for further initiatives to deal with issues such as acid rain and the depletion of the ozone layer.

Recycling and conservation measures will entail a greater degree of public and government participation due to increased pressure on non-renewable and renewable resources. Attention will focus on soil erosion and the loss of forests, wetlands, wildlife and ocean resources.

There will be a growing public intolerance of traditional industrial practices for resource utilization and, consequently, a greater demand for industries to use the best available pollution control technologies.

Increased environmental degradation affecting air, water and lands will occur. Some projected increases in greehouse gases, e.g. carbon dioxide, could result in climatic change and these climatological shifts may affect the viability of some global regions.

Management techniques will be used to prevent environmental problems amid a growing public realization that technology cannot be relied on to deal with all environmental problems.

The fields of biotechnology and bioengineering will continue to generate environmental concerns and present regulatory and control difficulties.

## B. National/Provincial Trends

Within Canada, there will be an increased demand for manufactured consumer goods and for high quality, reliable municipal services coupled with a greater awareness of environmental health issues such as the quality of drinking water and air.

Population growth, particularly in the southern part of the country including southern Alberta, will mean heavy demands on limited water resources. This could in turn lead to pressure for dam storage and transfers of water to meet agricultural, industrial and urban needs.

Tourism will expand and a growing demand for recreational areas and facilities could affect fragile ecosystems.

The increased production, storage and transportation of hazardous waste will be a growing concern as resource development and manufacturing rise. More resource utilization particularly in gas, oil, oilsands, forests, hydro and thermal generation will afford subsequent environmental challenges.

Agricultural land use, resource extraction, urbanization and wildlife habitat areas may generate conflicts between users.

The tremendous costs associated with maintaining present roads, water, sewer, power and gas facilities could rise dramatically.

Air quality considerations will become an integral part of the urban planning process. Municipalities may need to review their transportation systems in view of concern about air pollution in urban settings.

## C. Trends Related to the Environmental Mandate

The mandate of Alberta Environment is to achieve the protection, improvement and wise use of our environment now and in the future.

### 1. Air

Public environmental accountability will require closer attention to monitoring, control and enforcement of atmospheric emissions. This could result in further controls and restrictions on releases of wastes into the atmosphere.

### 2. Water

Urban population growth, recreational demands, agricultural needs, climate warming, and industrial water use and disposal requirements will highlight the need for integrated and controlled water management policies. Water conservation by all users, including municipalities, will be required. Water pricing policies reflecting the value rather than cost of this resource will be necessary. Comprehensive drinking water standards will entail more complex monitoring. There will be a greater emphasis on producing higher quality wastewaters discharging to water courses which will result in more innovative wastewater treatment and disposal methods including irrigation, industrial reuse, and habitat development. There will be greater scrutiny of and restrictions on the types of wastewaters which will be allowed to be discharged into the environment or into municipal systems.

### 3. Waste Disposal

Public emphasis on a cleaner environment will result in a production curtailment of toxic waste. An emphasis on segregation and recycling of municipal waste will increase resource utilization and reduce the need for waste disposal sites.

### 4. Utilization, Flood Protection, and Wetland Habitat Conservation

Greater attention will be paid to water/land use conflicts, particularlly around wetlands and recreational waters and specific land use restrictions may be required. Awareness of the hazards and damage of floods will result in better controls on the types of developments permitted in urban flood plains. Flood protection measures for existing developments will also receive increasing consideration.

## D. Municipal/County/Community Trends

### 1. General

There will be a tendency toward increased demand for municipal services resulting in hard services such as water, wastewater and solid waste disposal having to compete with softer services for funding. In larger municipalities, major funding will be required to simply maintain current standards of services. Underground municipal systems are aging and deteriorating. The cost of replacing a waterline, for example, can be five to ten times the present worth of the original installation due to problems of maintaining services during construction, working around existing services and replacing destroyed pavement, etc. Consequently, municipalities will be forced to utilize integrated planning for replacement of utilities, keeping careful inventories of the condition of water, sewer, electrical, pavement, curbs, gutters, etc. When the overall state of deterioration reaches a predetermined critical point, the entire works will be replaced rather than treating each utility separately.

Through this process, municipalities will become acutely aware of the cost of inadequate design or poor construction and therefore will require higher quality design and quality control on installation. There will also be greater emphasis on planning major trunks to avoid duplication in the future and utilization of utility corridors to service potential new developments.

To avoid replacement, many utilities, including transportation, will consider conservation techniques including water metering, water restrictions and staggered work hours for transportation and power. Because of the ever increasing siting difficulties for sanitary landfills, municipalities will be forced to plan ahead for future developments and have secured sites well in advance. There will also be a new emphasis on reducing the amount of landfilled waste. Recycling programs will extend the life of exiting sites.

## 2. Air

In larger municipalities, there will be increasing public concern regarding urban air quality and its effects on health, vegetation, buildings, etc. This concern and the demand for a cleaner environment will have implications with respect to the type of industries that can locate in certain areas and the siting of urban industrial parks. The contribution and significance of certain urban-based developments and activities to provincial/national/global atmospheric problems will require increased municipal-provincial cooperation to develop and implement effective control strategies.

## 3. Water (Drinking Water)

There will continue to be strong public concern regarding the quality of drinking water. This will largely be due to the analytical capabilities for detecting compounds outstripping the ability of the scientific community to explain the consequences or effects of the compounds in water. Currently, public expectations and demands for quality drinking water exceed practical limits for production and delivery.

Municipalities can respond by improving plant operations with processes that will alleviate aesthetic problems such as colour, taste and odour which in return will reduce the public's awareness and concern regarding water quality. There will also be a trend towards developing secure sources of high quality water which will mean having controlled watersheds with limited or restricted industrial developments upstream.

The major communities in the province will have adequate water supply to meet their growth needs; however, many smaller communities on groundwater and intermittent surface waters may have problems meeting water demands. The current trend of regional water systems will continue with central treatment plants producing reasonably high quality water distributed to many communities.

Small communities currently experiencing problems finding qualified people to operate water treatment facilities may construct systems that can produce a reasonable quality of water with a minimum of operation. However, these systems tend to be more costly to construct. This problem may be dealt with by sharing experienced operators with other communities, going as far as to form a regional board to service and maintain a number of individual water systems.

There will be a tendency towards more sophisticated management of water systems with emphasis on the proper water pricing and associated metering necessary to ensure that all water is accounted for and that actual users are the ones who pay.

4. Water (Wastewater)

There will be an increased public demand for pollution-free rivers and lakes. Although Alberta municipalities have some of the highest standards of wastewater treatment in Canada, there will be continued calls for improvements. Major municipalities in the province are currently required to remove solids and organics. Calgary is also required to remove phosphorus. In the near future, all major municipalities may be required to remove phosphorus and disinfect their discharges. This may ultimately be followed by a requirement for filtration of wastewaters. In some areas, the trend will be away from conventional technologies to more innovative solutions to wastewater disposal. In southern Alberta, irrigation of wastewaters will become a fairly common practice. The City of Calgary is currently studying the feasibility of utilizing wastewater for irrigation and, by the year 2020, at least some of the effluent from that city will likely be used this way.

There is growing intolerance of the use of lagoons for wastewater treatment even though these systems are a very effective method of wastewater treatment. Finding sites for lagoons is becoming extremely difficult for municipalities due to the "not in my backyard" attitude of the surrounding community. This will force the communities to look for innovative solutions. Some examples of these are the development of a wildlife habitat with the wastewater from Stavely, High River, and the Cargill meat processing plant; the use of wastewater for secondary oil recovery at New West Village, and the utilization of Bonnyville effluent for process water at Suncor's Fort Kent project.

5. Waste Disposal

Like lagoons, landfill sites are becoming more difficult to locate because of increasingly stringent site standards and the concerns and objections from neighbouring landowners. This will necessitate landfill siting becoming an integral part of the regional planning process. Municipalities will be siting new facilities well in advance and the facility will be planned through its entire life cycle including final reclamation. As a result of the difficulty in finding new sites, municipalities will attempt to conserve facilities by recycling programs which will reduce the volume of material deposited in the site.

There does not appear to be a trend toward other recovery processes such as pyrolysis or composting although these may be used in smaller communities.

There will be an increased cost to municipalities for reclamation of existing waste disposal sites. This will include gas recovery systems and liabilities that extend well into the future.

The tendency toward regionalization of landfills with collection points in municipalities and one central landfill site will continue and may even extend to utilizing rail as well as trucking systems.

Municipalities will be required to carefully manage toxic and hazardous wastes. To achieve this, they may set up their own hazardous waste transfer stations. Municipalities will also be required to take an active role in identifying possible hazardous waste transportation routes. Developments of collection systems for household hazardous wastes in conjunction with normal household solid waste may also be required.

# DEPARTMENT OF FORESTRY,
# LANDS AND WILDLIFE

[Land Information Services Division]

## GLOBAL/NATIONAL/ALBERTA/MUNICIPAL/COUNTY/COMMUNITY

- The three broad trends of increasing costs, increasing inter-dependency and increasing complexity could be expanded to include a demand for quicker response times and more up-to-date information. These trends are affecting all areas listed in Parts A-C. The automation of the primary system is a significant step towards meeting the requirements of all these trends. The implementation of the Land Related Information Systems (LRIS) concepts should take us another step towards meeting trend requirements.

## GLOBAL/NATIONAL/ALBERTA TRENDS

- Increasing size and importance of the 'information economy' as part of the increasingly interdependent global economy;

- An essentially fixed supply of land and natural resources needed to sustain an increasing number of people;

- An unavoidable trend for land/resource use and allocation decisions to become more complex and more prone to cause conflict among stakeholders;

- An increasing realization of the importance of access to timely and accurate information to support decision making in all areas of human endeavour;

- Increasing level of co-operation and, more importantly, co-ordination among levels of governments, industry and public interest groups; and

- Increasing importance of non-consumptive land and resource uses as a component of all economies.

## GLOBAL TRENDS

### A. Political

- Changing trade patterns - reduction of trade barriers (European Economic Community, Canada-United States) and a move to a global economy; and

- Improvements in communication and cooperation amongst nations;

B. Technological

- Accelerating improvements in computers leading to expansion of expert systems and artificial intelligence;

- Breakthroughs in development of information management technology; and

- Greater use of computers for managing and processing information.

C. Sociological:

- Increasing concern about the environment (pollution, disintegration of the ozone layer, greenhouse effect);

- Increased rights of the individual and concern about privacy and confidentiality;

- General trend to more automation in municipal planning and normal operations, including:
  a) on-line demographic, assessment and land use data
  b) computer-generated maps, and plans of public works facilities

- Increasing awareness of benefits of geographically referenced information systems; and

- a gradual move toward use of remote positioning systems:
  a) to record, and subsequently retrieve positions of utilities as built
  b) to geographically reference information relating to:
    - public works maintenance
    - demography
  c) as a navigational aid for emergency response and maintenance activities.

NATIONAL/ALBERTA TRENDS

- Continuing fiscal restraint, which will result in:

a) closer cooperation (more cost-sharing/less duplication) between all levels of government
b) more gradual phase-in of geographical referencing than earlier anticipated
c) demands on provincial and federal governments to fund larger share of surveying, mapping and LRIS programs for municipalities

- Lesser initiative on the part of provincial and federal governments, placing more responsibility on municipalities for initiating and maintaining surveying, mapping, and LRIS program; and

- Pressure on municipalities to advance surveying, mapping and LRIS programs, using common standards, in order to facilitate data exchange with government and industry.

A. National

- Greater emphasis on conservation and efficient use of natural resources;

- Expansion of trade with the United States (Canada-US Free Trade) and Pacific Rim;

- Continuing improvements in communication and mapping techniques; and

- Increasing trend to integrated business/government, management decisions.

B. Alberta Trends

- Emphasis on the expansion of high-tech industries;

- Increase in government compensating individuals or groups for losses resulting from government action;

- Increased participation by citizens in government decisions; and

- Increased use of the judicial system by special interest groups to change government policy.

## C. Relationship to Departmental Mandate

- The department will increasingly need access to information held by local authorities and will increasingly need to involve local authorities in decision making related to public land/resources;

- Increasing need for more sophisticated and explicit decision making processes on a joint basis with local authorities;

- Increasing cost-sharing of information projects and systems needed to support a higher level of co-ordination and provided information that cannot be afforded by individual stakeholders;

- Local authorities may look to provincial agencies for advice on decision making and information management technology and techniques;

- Municipalities will be encouraged to initiate advanced surveying, mapping and LRIS programs (if they have not already done so). This will place greater demand on our department for technical and monetary assistance;

- Exponential increase in demand for current, reliable, easily accessible land-related information;

- Movement of the information "systems" closer to user; and

- Need for more effective ways to capture, handle and disseminate information.

## MUNICIPAL/COUNTY/COMMUNITY TRENDS

- Increasingly broad involvement in/responsibility for matters that have typically not been a part of their role;

- This will require support and assistance from other levels of government to establish the necessary expertise and institutional/organizational arrangements;

- A greater awareness of the benefits of GIS, resulting in:
  a) more demand on budget to proceed in that direction
  b) a need for outside sources to provide general knowledge and specific information

- More competition between socially and technically oriented programs for human and fiscal resources;

- More rapid turnover of staff, causing acute continuity problems for all municipal programs;

- Increased competition between municipalities for economic expansion;

- Increased demand for fairness/consistency of government policy/action;

- Increasing demand for special attention to minority and special interest groups; and

- Increasing need to integrate activities with neighbouring municipalities and other levels of government.

# DEPARTMENT OF FORESTRY, LANDS AND WILDLIFE

## [Public Lands Division]

# GENERAL TRENDS AND TRENDS IN RENEWABLE RESOURCE MANAGEMENT

## A. Global Trends

- technological innovation can be expected to increase and effect the way we see and use our resources

- conflicting demands for land/resource use will increase and people will expect more efficient and timely allocation decisions from government

- increased need for more and better information on which to make decisions

- the general public will want more access to government information and decision-making systems. At the same time, there will be demand for increased safeguards to maintain confidentiality

- if current climatic conditions continue, an increase in dependency on imported food and technology on the part of Third World countries can be expected. The current balance between the international trading market and foreign aid could be altered by this.

## B. National/Alberta Trends

- demographically, the population distribution of the country can be expected to age as the "baby boom generation" moves through the age distribution profile

- family structure will continue to change; fewer children per family, more "extended" families because of divorce and re-marriage

- increased ethnic diversity

- there will be more job and residence mobility

- people will be better educated, have more leisure time and disposable income
- increased concern for environmental protection and conservation (wise use) of natural resources

- people will want more accountability from all levels of government. They will expect more efficiency and less bureaucracy

- more involvement, cooperation and coordination by people and the private sector in government decision making

- special interest groups will grow in strength and influence

- changing trade patterns – increased focus on Pacific Rim nations plus intensification of north–south patterns due to free trade pact

1. Alberta

- continued reliance on agriculture and energy sectors for economic growth and stability

- focus for diversification will be on tourism, high technology and forestry

- "value added" industry will be encouraged i.e., processing of natural resource products within the province

- continued fiscal restraint, at least in the short term, and continued movement to privatization of government services

- continued increase in amount and diversity of recreation use

- proportion of consumptive to non–consumptive recreation will change in favour of the latter

- municipalities will show greater maturity and demand/receive more responsibility and greater autonomy

- rural/urban population balance will change to favour the urban side even more than today

- composition of rural population will also change. Farm size will increase meaning fewer "farm" families but overall "rural" population will increase because of increase in rural residential development

C. Department of Forestry, Lands and Wildlife

- increased amount of public land devoted to recreation

- increased competition for public land/resources e.g., agricultural expansion vs. forestry development vs. energy projects vs. recreational use e.g., development oriented commercial recreation vs. preservation/wildland oriented recreation

- increased challenge to maintain fish and wildlife populations/habitat

- increased reliance on integrated resource management to make better land and resource use decisions

- need for more and better information bases for decision making

- greater degree of involvement of the general public, special interest groups, municipalities and industry in the planning, development and operation of projects

- increased efficient utilization of resources because of technological change e.g., more utilization of existing product (wood chips no longer considered waste) e.g., utilization of resources once considered to have low value (aspen)

- better coordination of headquarters and regional activities

- more efficiency in decision making/less duplication of effort by divisions

Two challenges will face the department:

1. Due to new and expanded programs decision making will tend to become increasingly complex. This tendency to complexity must be balanced with the public's demand for efficient and timely decision making.

2. One of the components of the higher demand by the public for a quality environment is a push for stricter enforcement (more regulations, enforcement officers who regulate but do not interpret or explain, and use of the courts to challenge decisions). This must be balanced with the need for education and public awareness programs which are more costly but, in the long run, are more effective. e.g., it's better for people to understand why certain activities like ATVs are inappropriate in alpine areas and therefore choosing to go elsewhere than to have an enforcement officer giving out infraction tickets.

## D. Municipal Trends

- increased demand for local autonomy

- will want to be more effective and active partners in provincial decision making. This will result in:

  - more joint efforts in projects
  - closer working relationships
  - more sharing of information

# DEPARTMENT OF LABOUR

# GENERAL SAFETY SERVICES DIVISION – GENERAL TRENDS

## A. Economics

The very "tight" economic environment for all clients, from owners to contractors to manufacturers and municipalities greatly influences the level of attention and resources devoted to the "safety" issue. All organizations are looking for an edge to maintain some kind of margin over the competition, or in response to external budget pressures. This occurs particularly where it is assumed the "system" has built in a margin for error. This general environment significantly reduces safety margins and increases the propensity to cut corners.

## B. Technological Change

The rapid pace of technological change is a significant influence. Organizations are scrambling to catch up and keep up. Doing so requires the latest technology, which is then discarded for newer technology as quickly as changes occur. Several aspects of the technological change phenomena are particularly relevant to General Safety Services Division (GSSD).

a) Automation of Production Function Through Robotic and Other Means – this greatly enhances the capacity for quality control and consistency. Also enables quicker adaptation to new production runs, and greater product variety and turnover. Production becomes more and more varied, and changes more rapidly.

> Observation
>
> It will be harder for GSSD, standards writing organizations and local government to keep up with new innovations from a safety point of view. As well, increasing amounts of technical and judgmental expertise will be needed "in house" to handle advancements while the standards writing system catches up. Also increases need to clarify role for and linkage to the private sector engineering community.

b) Expert Systems – the existence of these systems greatly enhances the capacity to make complex bodies of data available and usable to wide audiences. The codes and complex regulations administered by GSSD and local government are very amenable to this kind of manipulation.

Observation

GSSD can take advantage of this by using these kinds of systems to get data to clients like local government and automate the code dissemination and updating process. Much more efficient than existing manual system, and also provides more timely information, but requires comparable systems at the municipal level.

c) Universal Systems Standards - these ever-expanding standards have greatly improved communication possibilities by standardizing connective systems, thereby enhancing the capacity to make complex data available to a wide range of users. Greatly enhanced telecommunications capacities, through advances like fiber optics, also enhance this capacity.

d) New Material - new products built with new material such as new metals, polymers and composites, and the fierce competition between producers of these products, will continue to ensure a stream of new materials and variations on old products.

## C. Budgets

Budget pressure exists at all levels of government and will continue in the future. Current cutbacks are not cyclical but rather represent a longer term philosophical or policy decision to create and maintain a smaller more efficient and flexible government presence.

Observation

This changes the long run role provincial and municipal governments can play and requires that strategies not amount to merely "squeezing" old systems, but rather that new ways be found for meeting the public safety mandate.

## D. Social Policy

The Alberta government has tabled a new social policy document (Caring & Responsibility). In so doing it has taken up the challenge of expressly dealing with social issues by defining the role of government in the social policy realm. Recent increases in fines associated with Occupational Health & Safety legislation, the review of the Workers' Compensation Board, and detailed review of Labour and Education related legislation are examples of specific government initiatives in the social policy arena. Safety is specifically identified in this document as a social policy matter, since safety is very much a "quality of life" issue. In its qualitative dimension it is subject to change and redefinition. These changes will be made manifest in the political arena.

### Observation

> Since safety is clearly very much a quality of life question, it will remain significant, as part of the overall social policy arena, at several levels of government.

## E. Uniformity of Standards

Standards and their implementation are becoming significant economic factors. They will continue to receive a higher profile, particularly in respect of free trade and related questions. Pressure for uniformity between and within provinces is increasing. As the system becomes more national it becomes more cumbersome. The capacity to change and adapt will be reduced. Performance based standards are becoming commonplace.

### Observation

> Provincial and local government participation in formation and administration of the standards portion of the system becomes even more important. Performance based standards become more relevant, as does the need to assure continued consensus.

## F. Role of Government

The Canadian Supreme Court decision in the *Kamloops* case and other similar cases at other levels, continues to cast a long shadow. The role of government and the impression it creates will continue to require specific attention. This has been reaffirmed in the Mindbender Enquiry, the Code Enquiry, and most recently the enquiry into the shopping centre collapse in British Columbia. In each case the role government deliberately created for itself, inadvertently took upon itself, or gave the impression it was fulfilling, will be a tremendous influence on the attribution of accountability.

### Observation

There is a need for role clarity in respect of government and others in the safety system. Statutes must reflect reality, as must administrative policy and programs. Extremely important that a consistent and accurate impression be created, from legislation to communications planning.

## G. Awareness

The changing demographics of Alberta society will become more pronounced in the next couple of decades. The population will age and generally have a higher level of education. There will be increasing self-actualization, skepticism and level of concern regarding general safety. Citizens will continue to want to know more about the risks they are taking and what is being done to mitigate them. The Workers' Health Materials Information Service is a recent example of an attempt to provide information in response to an existing demand.

### Observation

There will continue to emerge greater levels of concern for quality of life issues, including safety. Likelihood of some specific issue being targeted increases. Manifestation is most likely at the local or regional level.

## H. Efficiency

The equality-efficiency trade-off will become more evident as the role of government is carefully scrutinized in each policy arena. The efficiency trade-offs associated with direct government intervention are becoming more pronounced. This is evident in the self-reliance and accountability theme found in the social policy document.

### Observation

More individual accountability for personal safety will be required. Genuine "systemic" kinds of safety issues are worthy of public policy attention, as opposed to individual consumer and self-protection kinds of questions.

## I. Economic Change

Alberta's economic base is changing and will continue to do so. The rise of the manufacturing and service sectors, especially the former, will create a different economic mix, both quantitatively and qualitatively.

### Observation

As infrastructure becomes more interconnected and complex the nature of risk changes. Public or general risk related to interconnection of systems increases. Geographic distribution of facilities is also important in terms of local capacities.

## J. Complexity

Safety will continue to be a complex issue, and systems utilized to address it at the societal level will continue to be complex. There exists an extremely wide variation in both clients and those who participate in program delivery. The nature and scope of standards themselves is becoming extremely complex. The sheer volume of information involved is tremendous. Policy makers must recognize the system operates on the basis of the interdependence and interconnectedness of a number of large institutions.

### Observation

Pace of change, in terms of degree and timing, must be viewed realistically. Alberta GSSD and local governments are only single players in a very large complex system; it is simply not possible to alter its role dramatically, either through enhancement or reduction. They are a key part of a bigger system. Long range strategy will be most effective if it uses what is best in the system, while gradually attempting to change other aspects of it, at least within Alberta.

## K. Incidents

The "awareness" level in respect of general safety matters is higher than normal. Recent incidents such as the Mindbender situation, the Burnaby shopping centre collapse and the difficulties of handling nerve gas in military facilities, and flooding associated with recent rainfall have heightened citizen's awareness of the kinds of risk they are still exposed to on a regular basis; safety and environmental "consciousness" will continue to rise. The "profile" for GSSD is highly variable and incident related. It will always depend on what happened, or didn't happen recently.

> Observation
>
> There exists the possibility of an "event driven" strategy if comprehensive flexible frameworks are not in place. Though the Division and local governments can be buffeted from one incident to another, it is important that organizations not "mutate" after each occurrence.

## L. Cost

Movements have been made towards full cost recovery in government, including GSSD. There is a long way to go in this regard since only incremental changes occurred in the last couple of years. Approaches to cost are not consistent.

> Observation
>
> Government is a "subsidized" function. Any attempt to utilize private sector options will fail as long as government offers a lower cost alternative. Any long term divestment or choice based privatization scheme must be considered only in the context of full cost recovery by government, yet uniformity must be viewed with suspicion. Cost is a powerful policy tool. It should not be limited unnecessarily.

# GENERAL SAFETY SERVICES DIVISION – SPECIFIC ISSUES

## A. Propane

Propane, because of its cost, is becoming more and more popular, especially in the area of motor vehicles and in various other areas such as home barbecues. We are also seeing its increased use indoors in equipment such as zambonis, propane powered floor polishers and laboratories. In many parts of Europe, self–service propane facilities are in place and it is simply a matter of time before we see similar endeavours here in Canada.

The propane industry is simultaneously coming to grips with the importance of safety and is dedicating considerable time and energy in promoting the safe use of propane. This increasing popularity of propane will, therefore, require regulatory authorities including local governments to respond accordingly.

## B. Natural Gas

There is considerable experimentation going on with respect to the use of natural gas in motor vehicles. Home compressors for refueling vehicles are being experimented with and it is simply a matter of time before natural gas becomes more popular, the main reason being its cost.

## C. Do–It–Yourselfers

Over the last number of years we have seen a dramatic increase in do–it–yourselfers, especially in the area of home renovations. The industry has responded to this keen interest in a number of ways. They are manufacturing products which are more easily installed by your average handyman and going to great lengths to include relatively straight forward instructions for installations to entice the "handy kinda guy".

Homeowners, in many instances, are also becoming more knowledgeable in terms of codes and regulations and as a result are more willing to challenge regulatory bodies.

They are not prepared to always accept the regulatory bodies interpretations of codes and regulations and will often challenge since they have used the codes/regulations themselves and feel they are knowledgeable as a result.

## D. Early Detection and Suppression of Fires in Residential and Assembly Occupancies

Smoke detection and quick response sprinkler system technology is presently in place. Legislation will require that early warning fire detection devices be tied to municipal fire services and that quicker response sprinkler systems be installed in all residential, institutional, high rise and public assembly occupancies by the year 2000.

## E. Regional Fire Protection Systems

Many small rural municipalities have tried to provide an adequate fire protection service while handicapped by little municipal support, poor training programs and old, cast-off equipment.

By the year 2000, fire protection organizations will have changed their operations substantially. Sharing of material and human resources through regional fire protection systems will result in better trained and equipped fire protection organizations. Regional communications will result in the development of regional fire services with volunteers and/or part-time firefighters in strategically located fire halls. These firefighters will be highly trained because of the high concern about liability and the environmental concerns about dangerous goods.

## F. Training/Qualification of Municipal Fire Service Personnel

Regional administration of the fire service will involve personnel who are well qualified, probably with degrees in the public administration or engineering disciplines. Senior fire department officers will be highly qualified to the standards now recommended by the National Fire Protection Association (N.F.P.A.) or to university level. Firefighters, inspectors, investigators and other personnel, whether full or part-time, will be trained to N.F.P.A. standards.

## G. Municipal Fire Service Visibility

Generally, the fire service has been fire suppression oriented. Fire service members are seen only as firefighters and involved in "things down at the fire hall".

By the year 2000 municipal fire departments will be working with citizen advisory committees to provide fire prevention programs which will identify community fire problems, raise public awareness, solicit resources through service groups (Lions, Elks, Shriners, etc.), work with school officials and generally make the public aware and get them involved in community fire prevention programs.

## H. Municipal Fire Protection Master Planning

The most important component for an effective municipal fire protection service in the year 2000 will be the utilization of a master plan.

Master planning involves all facets of a municipal fire service, such as:

a) planning for changing roles in the fire department (EMS, dangerous goods, fire prevention, etc.)
b) analyzing fire data and understanding local fire problems and trends
c) analyzing trends in community growth, socioeconomic and physical characteristics
d) survey of short and long term resources, personnel needs and costs

Master planning will permit control of a recognized firesituation, instead of reacting to an undefined fire problem. By controlling the fire situation, costs can be controlled, and life safety may be increased. Another reason for planning is to increase citizen awareness and participation in fire protection.

## A. Mental Disability

### 1. Background

Mental Health interest groups have been lobbying for a number of years for the inclusion of mental disability in the Individual's Rights Protection Act (IRPA) as a protected ground. The former Minister had indicated that further study would be required to ensure both a workable definition could be agreed on and that such an action would benefit the mentally disabled rather than work to their detriment. The mental health community responded to the challenge and worked to satisfy the Minister's concerns. A definition was proposed and the experience of other jurisdictions appears to allay the concern that the inclusion of this ground would work to the detriment of the mentally disabled.

### 2. Current Situation

Mental disability is an enumerated ground under Section 15 of the Charter of Rights and Freedoms. The absence of that ground under the IRPA leave it vulnerable to Charter challenge. The Alberta Human Rights Commission has again recommended that mental health disability be included in the Act as a protected ground.

## B. Sexual Orientation

### 1. Background

The recent announcement by Svend Robinson that he is a homosexual brings the question of tolerance versus acceptance of homosexuality to the forefront.

The Alberta Human Rights Commission has on two past occasions recommended the inclusion of sexual orientation in the IRPA as a protected ground of discrimination. Gay lobby groups continue to press for such action.

### 2. Current Situation

The Commission did not include this as a recommendation in the current round of amendment requests because it was felt that it would jeopardize the possibility of achieving the inclusion of "mental disability" as a protected ground.

Homosexuals currently enjoy the same rights as heterosexuals under the IRPA. It is only when homosexuals choose to make their activities known by overt homosexual behaviour that the possibility for discrimination exists. No individual is otherwise immediately identifiable as being homosexual, bi-sexual or heterosexual.

## C. Acquired Immune Deficiency Syndrome (AIDS)

### 1. Background

The increased public awareness of this problem has caused a backlash against the homosexual community which is one of the highest risk groups. The homosexual community is pressing this issue as a reason for the inclusion of sexual orientation in the IRPA.

### 2. Current Situation

The Alberta Human Rights Commission will take complaints of discrimination where there are reasonable grounds for believing that a person has been discriminated against because of AIDS, based on physical disability as a prohibited ground whether the individual actually suffers from AIDS or is thought (putative ground) to have AIDS.

The Commission will not take complaints based on a positive test for the AIDS virus since the mere presence of the virus is not a disability.

## D. Equal Pay for Work of Equal Value

### 1. Background

The Federal Employment Equity Act and Contractor Compliance Program affect federal employers in Alberta with 100 or more employees who wish to bid on federal government contracts of $200,000 or more. This has served to highlight the concept of equal pay for work of equal value.

Surveys consistently reference a pay gap between men and women and indicate that there is support for introduction of the concept.

However, very few people really know what the concept means and how it would effect the philosophy of compensation.

No one has yet established what part, if any, of the "pay gap" can be attributed to sexual discrimination or, indeed, if pay equity, as it is sometimes called, will serve to eliminate the gap.

In most jurisdictions, the public policy focus is female employees in female dominated classes of jobs and would appear to exacerbate rather than ameliorate the problem for other females and males whose jobs might also be under-valued but are not in female dominated classes.

### 2. Current Situation

It is the intention of the Commission to issue a public reaction paper defining the terms and indicating the conclusions the Commission will have reached from its review relating to pay equity for Alberta.

## E. Mandatory Retirement

### 1. Background

On June 5, 1985, the definition of age was changed to "18 years of age or older", thereby rendering mandatory retirement based on a given age a contravention of the IRPA.

This appears to be the government's intention because of concomitant changes made to statutes governing public pensions.

### 2. Current Situation

The only board of inquiry to have dealt with a complaint on this matter decided that the University of Alberta contravened the IRPA by retiring Professor Olive Dickason when she reached age 65. The decision in under appeal.

## F. Drug Testing in the Workplace

### 1. Background

A number of employers have embarked on across-the-board mandatory drug testing both pre and post-employment. The Canadian Human Rights Commission and others have condemned the practice and have formulated policies. Generally, the policies restrict such pre-employment testing to situations where a written offer has been made, subject to the results of such tests and where the nature of the job requires that a person not use drugs.

Concern regarding post-employment testing arises from the legitimacy of the requirements against job requirements and the use of results which may disclose other unrelated physical disabilities for which the individual is taking medication.

### 2. Current Situation

The Alberta Human Rights Commission has not published a formal policy but informally would assess individual complaints along the same lines aforementioned.

## G. Affirmative Action

### 1. Background

Alberta has been criticized because the IRPA does not specifically recognize affirmative action programs and the Alberta Human Rights Commission because it does not pro-actively lobby for and approve them.

### 2. Current Situation

The IRPA is the least restrictive of all human rights jurisdictions because Section 11.1 not only makes such special programs available, but it does so without requiring prior approval from the government or the Commission.

The Commission continues to be concerned about the ethnic-cultural communities and the opportunities that are available to them. The Commission recently participated in two public forums "Fairness in the Workplace" during the month June 1988 in both Calgary and Edmonton. The feedback was very positive.

## LABOUR RELATIONS/EMPLOYMENT STANDARDS/PENSIONS

Unlike the situation in General Safety Services municipal government is not directly involved in the delivery of programs related to labour legislation. Municipal government is thus more likely to be affected by trends and issues as an employer, rather than as government/policy maker.

Although it is too early to tell what effects the new Employment Standards and Labour Codes will have it is apparent there will be a much enhanced emphasis on employee/employer communication. This specific priority is addressed explicitly in both pieces of legislation. Local government, particularly large local government, will have to enhance its communication efforts in order to remain compatible with the long term intent of legislation.

The Local Authorities Pension Plan represents an extremely large commitment from both the provincial and municipal levels of government. Long term strategies associated with administration of this plan, which is presently under review, will certainly have an impact on local government as employer. Very significant costs and liabilities are involved.

The remaining pages of this document outline the short range trends that will affect municipalities in their labour relations activities. Although many of these will have a more immediate impact on employers dealing directly with trade unions the effects are not restricted to the organized environment.

## RESPONSIVENESS OF COLLECTIVE BARGAINING TO ECONOMIC CONDITIONS

### A. Overview

- Relatively stable economic conditions since the drastic downturn in 1983 - 1984 have seen wage settlements stay in the 1.5 percent to 3.0 percent range.

- Person days lost due to work stoppages have dropped from a high of 256,032 in 1986 to 56,043 in 1987.

- Employers are negotiating wage items such as lump sum signing bonuses as opposed to percent wage increases.

- Since 1987, the gap between wage settlements and CPI has increased appreciably.

- Public and private sector wage settlements have kept pace with each other with percentage increases of 1.5 percent to 3.0 percent since the dramatic decrease of 1982 to 1984.

- The public sector did receive slightly higher settlements than the private sector during the period October 1985 to February 1987.

- These sectors are expected to maintain these levels of settlement for the foreseeable future barring any major changes to oil prices or any unexpected conditions resulting from the free trade agreement.

## B. Compensation Issues

- Two Tier Wage Schedules:
  This system calls for reduced wage rates for new employees hired after the start of the agreement. Since first appearing in 1984 in the meat packing industry, this system is still appearing in various private sector industries such as retail trade and services.

- Wage Reopeners:
  The agreement is reopened at some point during the term (usually the second or third year) for an adjustment to the wages. This type of wage negotiation is becoming very common in Alberta because it allows the parties to enjoy the security of a multi-year agreement without making the long term monetary commitments.

- Cost of Living Allowance (COLA):
  While never common in Alberta, agreements with COLA clauses have gone from less than 2 percent in 1986 to 12 percent in 1987. Where they do exist,

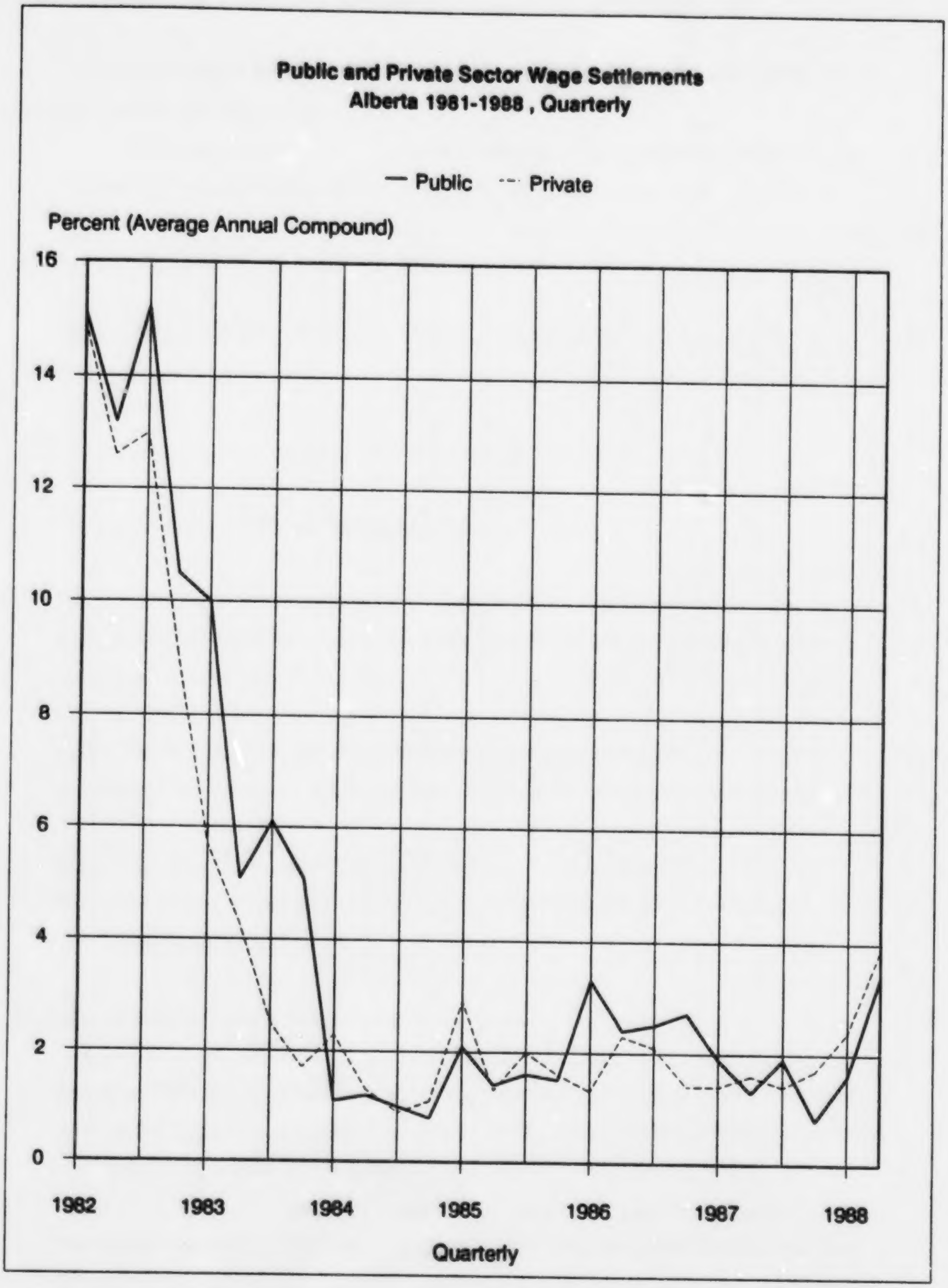
they are usually simple formulas tied to the consumer price index and designed to generate one adjustment during the term of the agreement. Lately, triggers are such that increases are not usually generated.

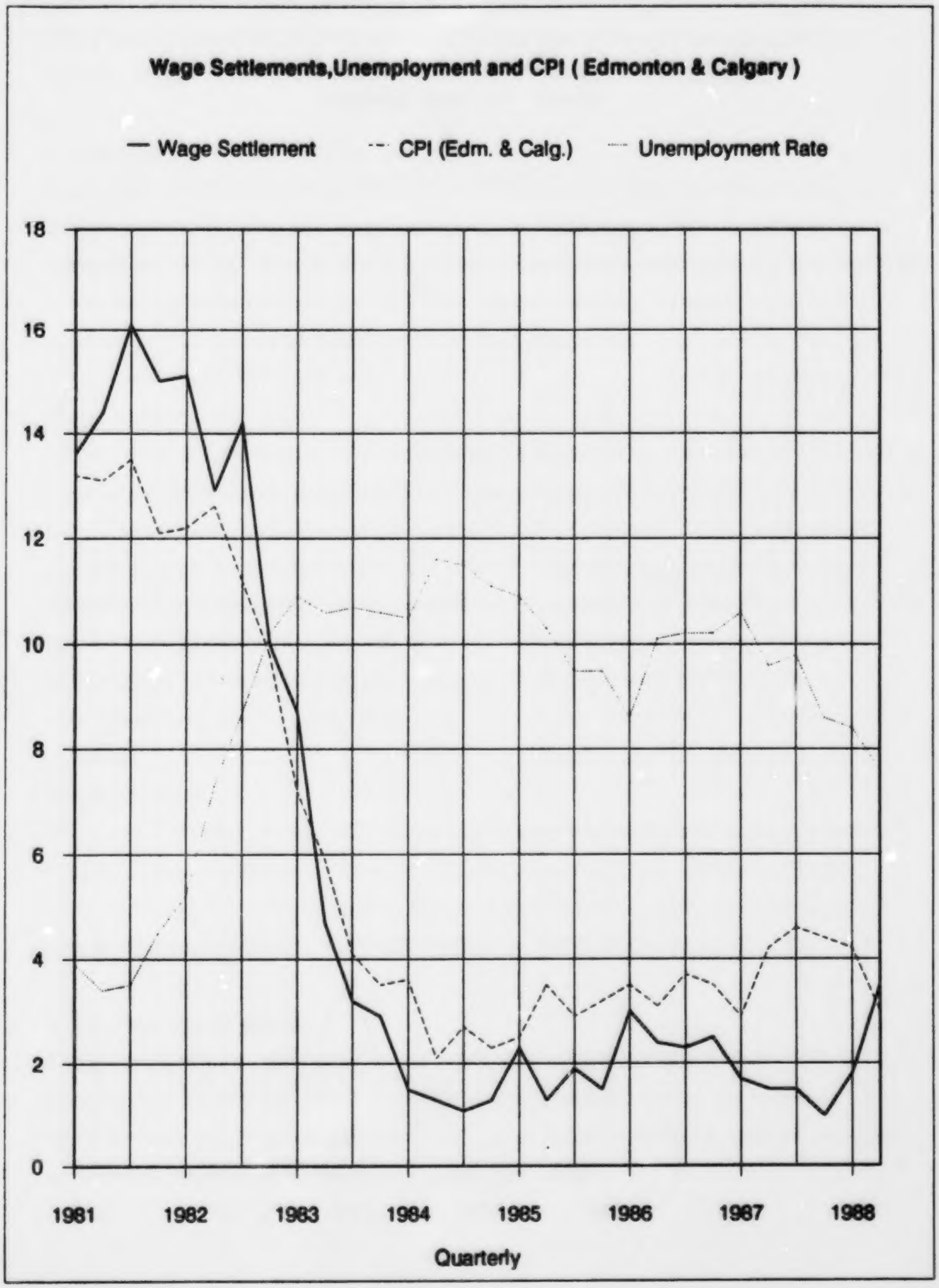
- Lump Sum Payments/Signing Bonuses:
  Lump sum payments are usually given in place of a wage increase (which is not incorporated into the wage schedule) in the first year of a multi year agreement. They have basically emerged and become increasingly popular since the economic downturn in 1981. Approximately 10 percent of agreements in effect provide for lump sum payments.

- Wage Freezes:
  Wage freezes first began to appear in private sector agreements in 1982 and in public sector agreements in 1983. Thirty five percent of public sector settlements provided no wage increase in 1984 compared to 26 percent of private sector agreements. Private sector wage freezes increased to over 30 percent in 1985 and 1986 compared to 16 percent and 7 percent for the same years in the public sector. For 1987, 26 percent of private sector settlements provided no increase compared to 8 percent of public sector settlements.

- Wage Rollbacks:
  Wage rollbacks began in 1983 in the private sector and 1984 in the public sector. They peaked in 1984 when 11 percent of private sector settlements involved wage cuts in the public sector was 1985 when they amounted to 5 percent of settlements. Very few rollbacks have occurred since 1986.

- Multi Year Agreements:
  There has been an increasing trend towards multi-year collective agreements during the 1980's. In 1982, about 40 percent of agreements were for two years or longer. By 1986, this had increased to over 60 percent with more three year agreements than ever before.


Public and Private Sector Wage Settlements
Alberta 1981-1988 , Quarterly
— Public
--- Private
Percent (Average Annual Compound)
16
14
12
10
8
6
4
2
0
1982
1983
1984
1985
1986
1987
1988
Quarterly


Wage Settlements,Unemployment and CPI ( Edmonton & Calgary )
Wage Settlement
CPI (Edm. & Calg.)
Unemployment Rate
18
16
14
12
10
8
6
4
2
0
1981
1982
1983
1984
1985
1986
1987
1988
Quarterly

## C. Other Significant Provisions Trends

An analysis of strike settlements, arbitration awards and selected agreements in 1986 found the following:

- Job security is the issue in many of the significant new provisions.

- No job loss due to contracting out.

- Contracting out and part-time employee provisions that are quite restrictive.

- Layoff and re-employment and position abolishment.

- Additions to layoff and rehires sections.

- Permanent part-time employee less than nine months work per year not covered by agreement. Layoff according to overall job performance (no reference to seniority).

- Full-time employees get work before part time. Regular part-time employees on separate seniority list (Clearwater Concrete and Teamsters).

- Enhanced layoff and recall procedures and limited bumping provisions(Government of Alberta and Alberta Union of Provincial Employees (AUPE).

## D. Update on Public Sector Bargaining

- The Government of Alberta master agreement with the Alberta Union of Provincial Employees ended March 31, 1988. The parties are in the process of negotiating a new agreement.

- The wage reopener schedules for April, 1987 has yet to be settled as two divisions have opted for interest arbitration and there will be no decisions until Fall of 1988.

- There were 46 public sector settlements averaging annual increases of 1.5 percent in the first quarter 1988, compared to 162 settlements in 1987 with average annual increases of 1.4 percent.

## E. Collective Bargaining Reaction to Privatization

- There has been some minor privatization initiative in the municipal sector, for the most part privatization has not been addressed formally in contract negotiation in Alberta.

## F. Construction Industry Issues

- The majority of construction collective agreements have not been renegotiated since the 1984 – 1986 term.

- Wage rates for most of these have remained unchanged since the last agreement.

- The parties appear to be waiting for the upcoming new construction collective bargaining legislation to come into effect before entering negotiations.

- An increase in non–union construction in the last three years has initiated a decrease in jobs available to union shops and the lower non–union rates have kept those few settlements in construction low.

- Because no major new collective agreements in the construction industry have been renegotiated since 1986, there has been no new approaches to sub–contracting.

- There are four project agreements now in force in Alberta involving approximately 1300 employees:

  - Genesee Contractors Association (Wabamun)
  - Foster Wheeler Ltd. (Maintenance–Suncor)
  - Associated Kellogg Ltd.
  - Spartan (Oldman River Dam Project)

## GLOBAL TRENDS

### A. Economic Trends

a) World Economics – Investments by other countries in Canada and the Canadian dollar places in the market.

b) Unemployment Rates – Ability for workers to move to other areas and countries for employment.

c) Unionization – Role of unions in society whether or not they are active in organizing. Current trend is a decrease in the unionized sectors in Canada and the United States.

d) Free Trade – Trade between Canada and the United States and between Canada and the European community. How it affects workers in both employment and ability to compete in the market place.

e) Legislative Changes – Changes in Legislation in other countries that may be adopted by the province — right to work. No strike or lockout legislation worker participation in company.

f) The question of AIDS and whether it should be tested for at the workplace. Another question is: can an employer refuse to hire or continue to employ someone with AIDS.

g) Drug Testing and Lie Detector use in the work force is becoming popular in some companies. To test current and potential employees.

h) World Oil Prices – Effecting the economy of Alberta and the makeup of our workforce — higher oil prices encourage larger, long term projects creating needed work in the construction field.

### B. National/Alberta Trends

- National Economy

- Regional Economy – Alberta compared to economy of central Canada

- Municipal Economy – "Have not" areas versus more prosperous areas in the province.

a) Unemployment Rates in the country versus the provincial rates. Higher rate of unemployment in Alberta has seen shift in workforces to other parts of the country. It has also weakened the unions ability to negotiate acceptable agreements. In some cases, reduction in wages and benefits.

b) Union Activity – Because of the economy and past activities of unions (Gainers – Zeidler), the unionized workforce has been reduced.

c) Legislative Changes – More rights being legislated such as the Charter of Rights and Human Rights Act.

d) Labour force is getting older with entry level being 19.3 years in the year 2000. This is due to more time being spent in schools and secondary educational programs.

# DEPARTMENT OF RECREATION AND PARKS

"A Futures Perspective"
(extract from
Foundations for Action – Corporate Aims for the
Ministry of Recreation and Parks: A Summary,
July 1988)

and "Implications for Sport and
Recreation of Specific Changes" (extract from
Sports, Recreation and Fitness in the Year 2000,
November 1988)

# A FUTURES PERSPECTIVE

The ministry's view of the future is based on trends, a vision and major challenges. Together they provide a basis for Alberta Recreation and Parks' future initiatives.

## A. Trends

There has been a marked change in the structure of society over the past decade. Trends such as the rise in numbers of seniors, young singles, single parent families, working women, the poor and distinct ethnic groups are likely to continue. There will continue to be changes in the structure and size of families, and there will continue to be a shift away from traditional male and female roles. Discretionary time will likely increase due to factors such as shorter work careers, longer vacations and underemployment.

Change is occurring at a magnitude and rate that is difficult to comprehend. In some instances, the processes of change are more rapid than the processes of adaptation. The inability of people to comprehend and successfully adapt to change can adversely affect their psychological, social and physical well-being. The result is a rise in the "psycho-social" costs of living which is most often characterized by increases in suicides, alcoholism, drug abuse, divorce rates, child abuse and sexual assaults. Furthermore, evidence suggests that young people are developing a "future phobia", a perception that the world is a very threatening place.

Alberta's economic situation will continue to be linked to world economic events, making it difficult to predict upward or downward trends, particularly in the value of its natural resources. Current indications suggest that the market value of Alberta's natural resources will remain below the peak of the late 1970s. It is expected, however, that Alberta's economy will continue to diversify. High technology and tourism-related industries are two examples of growth sectors.

Public concern will continue over taxes and how tax dollars are spent. Governments will be expected to continually re-evaluate programs and services. Due to the potential of decreasing revenues, Alberta's provincial government will be required to rethink its level of involvement in providing some services.

Rapid growth of information and knowledge will continue, increasing the importance of computerized technology. Technological advances will continue to streamline administrative operations and improve productivity. Health-related technology will promote good health and increase longevity. Innovation will provide new transportation and communication options. The term "global village" will become more and more relevant in the future.

Local initiatives and community enterprise will be emphasized. Thinking globally, but acting locally, will be increasingly a part of society. The trend toward greater urbanization will continue. There will be growing pressure toward democratization of organizations and fuller participation by individual members. The individual will take greater responsibility for his/her circumstances by becoming more self-dependent in all aspects of life.

Increasingly, the public will accept the doctrine of stewardship - that man has a responsibility beyond his immediate self-centered needs, to respect and safeguard the world's resources. Demand will increase for the conservation of wildlands, natural environments and passive open space, as well as for quality outdoor experiences and near-urban outdoor recreation opportunities. There will, however, be a continued loss of natural environments due to urbanization and intensification of land uses. Growing concern about pollution will be coupled with concern for the preservation and management of natural, cultural and historic environments.

The importance of the positive use of leisure will gain prominence in the future. People will have more options in defining their lifestyles. A conserver society will balance the current consumer orientation.

We study the future not because we want to predict it, but because it helps us to recognize the significance of the trends relevant today, to encourage the trends we support and to try to avert those which are considered undesirable. An awareness of the future gives us the opportunity to play an active role in determining our own chosen directions.

## IMPLICATIONS FOR SPORT AND RECREATION OF SPECIFIC CHANGES

### A. Physical Environment

Continued atmospheric change will cause the destruction or serious depletion of the ozone layer. This will result in sharply increased rates of skin cancer, the reduction of crop yields, and the damaging of aquatic life. Out-door recreation, as we know it today, will be severely curtailed by increasing ultraviolet radiation, particularly among the fair skinned members of the populace. Reduced yields will influence farm incomes, and generally lower the level of the economy, resulting in less disposable income. Lake quality will change markedly as algal blooms become more prevalent, with attendant oxygen depletion and subsequent fish kills.

A second consequence will be a warming of global climates, with attendant changes in rainfall patterns, and rising seal levels due to thermal expansion and ice melt. These could lead to flooding of coastal areas, increased drought in mid-latitude agricultural areas. Obviously, to a northern country like Canada, there will be some benefits from a warmer climate.

### B. Older, Longer Living Canadians

There will be an increasing demand for sport activities, competitions, etc. for the older age groups and less requirement for coaching, and officiating for children's programs. Facilities which are presently youth oriented will be utilized by a wider section of the population. For example, arenas and pools will move toward multi-purpose community centres instead of being age or sport specific facilities.

The sheer numbers of clients older than those to which we are accustomed will require more facilities and programs for adult participation. Because of their education, these clients will seek a broader range of services, i.e. continuing education, skills courses. Retirement planning has many looking at programs and services and beginning to demand more versatility, use of facilities, prime-time use, etc. Older adults will become increasingly involved in planning their own leisure pursuits, rather than a laid on program. More emphasis will be placed on the social and therapeutic aspects of sport, recreation and fitness. On the positive side, the senior group will provide an excellent, well educated volunteer base to assist with community development.

## C. Smaller Families More Single Parent and Male Parented Families

There will be an increasing need for child care facilities for adult programs and for an increased offering of courses at varying times to allow single parents to participate in recreation activities. More short-term course offerings, "how to" courses and simple skill courses to enable single parents to participate at their own pace. More opportunities will be demanded for adults to participate in recreation activities while their children learn skills (as this is usually their only time for leisure pursuits as well), i.e. child swimming lessons, adult aquatics. Family centred activities will still be in demand as working parents want to enjoy their leisure time with their children (i.e., public skating, swimming, picnics, bicycle riding, walks in parks, etc.)

## D. More, More Active, Retirees and Early Retirees

Older adults are already a strong lobby group and will continue to demand a broadening scope of service. Retirement planning has many seniors looking at current programs and services and beginning to demand more versatility, use of facilities, prime-time use, etc. Older adults will become more increasingly involved in planning their own leisure pursuits, rather than merely participate in standard programs. There will be increased travel opportunities for older adults as special reduced packages become available. Changes to facilitate seniors' use of standard transportation facilities and special meals will be demanded by the senior travellers themselves. Early retirees will provide an excellent, well educated volunteer base to assist with community development, although the ability to pay for sport, recreation and fitness services will be limited for many.

## E More Employment in the Service Industries, More Women in the Work Force

There may be a demand for recreation programs and facilities to fulfill the needs that are no longer satisfied in the workplace. There will be an increasing need for child care facilities for adult programs, and for courses at varying times to allow women to participate in recreation activities. More opportunities will be demanded for adults to participate in recreation activities while their children learn skills (as this is usually their only time for leisure pursuits as well), i.e. child swimming lessons, adult aquatics.

### F. More De-institutionalization of People with Disabilities

There will have to be a continued focus on accessibility of facilities to people with disabilities. Societal expectations that the disabled be integrated into regular programming may increase the staff and funding requirements. Necessary actions may well require an educational process designed to change the attitudes of generic service providers vis-a-vis the acceptance of people with disabilities, and any additional needs or requirements. There may be an increasing need for partnerships with health and social service agencies if this integration is to proceed smoothly.

### G. Higher Proportion of Immigrants

Canada, now with a large part of its population made up of recent immigrants, must appreciate the uniqueness of each ethno-cultural group and ensure that their sport, recreation and fitness needs are met, within the context of their culture. Education of recreation professionals in this area will assist in the continued evolution of the Canadian culture. Further training will allow them to be more responsive to the recreational needs of the citizens of each ethno-cultural group.

### H. Changing Attitudes to Education

More people are returning to classrooms and are staying in university longer. Joint efforts are required of recreation professionals and educators to develop a Leisure Education component, to be included as part of the regular education program to help prepare for a changing society, and to develop the skills, knowledge and attitudes about the importance and value of recreation. Recreation, fitness and sport should be positioned as part of a person's lifestyle, both before and after retirement. This will be especially challenging with those cultures for whom this idea is foreign. The education system must adapt to serving an adult and older adult population, rather than being solely youth focused.

### I. Increasing Automation

The rapid increase in the use of technologies utilizing automated equipment has reduced the amount of physical labour required in the workplace. The use of electronic equipment in the office is resulting in massive change in that environment. As a result, people often work with machines rather than with other people, thus decreasing social interaction in the workplace. Some of the adaptations to these developments can be seen in longer vacations, job sharing, part-time work, earlier retirements and more frequent sabbaticals. The dehumanization of the workplace, by the introduction of technological changes may well lead to further demands on recreation services to fulfill innate social needs. In addition, increasing numbers of sedentary jobs may increase the demand for physical activities during leisure time. On the positive side, the continued use of computers and other electronic aids to facilitate the planning and delivery of recreation, fitness and sport programs will help us keep abreast.

### J. Increasing Travel and Holidays

Increased travel opportunities will result in more demand being placed on recreation facilities in resort areas, more competition from foreign tourists for access to recreation resources, and homogenization of recreation offerings. Generally, people will take shorter, but more frequent, holidays. More holidays will be to specific destination areas or resorts. Recreation practitioners will need to promote and package their services in a professional manner to compete with the offerings of other areas, and to attract consumers attention.

### K. Emergence of the Leisure/Shopping Concept

The development of the leisure/shopping concept may well have a significant impact on Canadian society during the next ten years. The integration of leisure with shopping, especially in climates which discourage outdoor activities during large portions of the year, is an illustration that joint endeavours between private, public and commercial organizations are possible. There is a need to develop and/or cultivate networks with other actors to facilitate these ventures. The high profile marketing employed in these ventures is becoming the norm. The packaging of leisure in the same professional manner can attract consumer's attention, thus helping to meet the goals of sport, recreation and fitness.

### L. Increasing Numbers of Electronic Devices

The surge of home videos and personal computers widens the range of leisure activities for all ages, from children to older adults. These 'toys' may decrease necessity of recreation agencies or educational institutions to provide basic exposure courses, as people can view them on their TV sets and practice at their own pace. Increased use of electronics may result in a decreased demand for physical activities as people spend more and more of their leisure time in front of a screen. An increased tendency for people to recreate with machines rather than other people will result in decreased social experiences, and may well place a demand on recreation services to fulfill this need of social interaction. Increasing dependence on vicarious experience of this type, combined with lower levels of physical interaction, may increase the demand for physical activities during leisure time.

### M. Increasing Participation in "Risk" Sports

As a result of high settlements, insurance premiums covering recreational activities and facilities have increased significantly during the past few years. Although there is a need to find balance between safety and reducing the enjoyment of the participant and the spectator, one must be alert to the possibility that fear of liability suits may be used as a reason for discontinuing programs.

## IMPLICATIONS OF CHANGE FOR POLICY

The review of the trends occurring in Canada leads logically to the suggestion of policy implications for the providers of sport, recreation and fitness services. Several of these are listed below.

1. In that, recreation, sport and fitness will be able to help people deal with the ever-increasing stresses, strains and alienation of everyday life, it is imperative that governments continue to provide the significant levels of support for the delivery of recreation, sport and fitness programs that have characterized the last two decades.

2. As levels of societal stress rise, governments should emphasize self-help, self-reliance, individual choice and responsibility. To foster this there should be consideration given to increased levels of resource commitment to leisure lifestyle initiatives.

3. As the demands placed on the recreation, sport and fitness system increase, governments should consider funding greater support and recognition for community-based, volunteer sport and recreation associations and groups, particularly in the area of management skill development. Such groups can also take over much of the service-delivery of traditional programs.

4. As a response to restraint pressures from both the public and political sectors, government should be encouraged to strengthen the base of volunteer leaders, particularly among the middle and older age groups. In the 1990s, the big generation will be at the prime ages for family and community oriented volunteer work. Many people in these groups will have had volunteer experience in the past, and thus require re-motivation and training refreshers to become volunteer leaders once more.

5. The increasing ubiquity of electronic communications devices such as video recorders, video discs and personal computers which access electronic messaging networks, will allow government to enter the leadership development area at a higher level than has hitherto been the case. The government should encourage the private sector to teach lower-level leadership skills for which there is a lot of demand, while the government concentrates on delivering higher order skills to fewer people by electronically-aided means.

6. Due to continued public and government concern over rising expenditures and decreasing revenue, governments should continue to investigate alternative delivery mechanisms such as privatization, partnerships with the private sector, the use of cooperating associations, etc., and to employ use of electronic technology wherever cost reductions will be realized. However, it is recommended that this should not be done by sacrificing continuing support for tax-based basic sport, recreation and fitness services.

7. In that the proportion of our society which is in the senior age group is increasing rapidly, governments should consider initiatives that would ensure that new sport, recreation and fitness program initiatives for seniors and the upper middle aged are developed.

8. As the numbers of individuals in non-Canadian ethno-cultural groups increase, governments should attempt to ensure that their recreation, sport and fitness needs are met in ways compatible with their cultures.

   Governments should attempt to ensure that recreation, sport and fitness professionals are fully conversant with the special needs of these groups.

9. In that recreation, sport and fitness, and the associated travel, can be major contributors to the economy, governments should encourage greater coordination and cooperation between the various public, institutional and commercial groups having interests in these fields.

10. In that the number of single parent families is increasing rapidly, governments should attempt to ensure that recreation, sport and fitness programs can be accessed by families having only one parent, regardless of the gender of that parent. Innovative programming and use of facilities should be encouraged in order to maximize the limited time available to single parents and their families.

11. **As people with disabilities are more integrated in general every day life, governments should consider increasing efforts to ensure that the recreation needs of people with disabilities are fully aware of their needs.**

**"The future is not a place we are going to, but one which we can create if we have the will and the vision."**

# DEPARTMENT OF
# SOCIAL SERVICES

# LONG–TERM TRENDS IN SOCIAL SERVICES

Alberta Social Services exists in order to protect and promote the social well–being of Albertans, through services which encourage and support individual and family independence and self–reliance. Several trends are emerging within the various social service programs; they are covered within the following four service lines:

## A. Income Support

There are decreasing numbers of single employables on the Social Allowance caseload, however, that is offset by increasing numbers of single parent families needing assistance. Among lower income families, the family size is increasing slowly, resulting in more people per case and higher associated costs. Another emerging trend is the increase in the numbers of families requiring supplemental allowances, as their wages are not sufficient to meet their needs. A decrease in the unemployment rates in Alberta does not necessarily result in the caseload decreasing commensurately. Clients seem to need additional assistance in becoming competitive for available jobs.

Alberta Assured Income Plan (AAIP) – As the number of elderly persons in the province increases steadily, an increased demand for AAIP will likely result. However, due to improvements in private pension policies, the average cost per case is decreasing.

Assured Income for the Severely Handicapped (AISH) – The client caseload is expected to continue growing rapidly, as handicapped persons enjoy longer life spans, under better medical care. The movement towards de–institutionalization of the mentally and physically handicapped is also expected to continue, resulting in an increased demand for financial support for handicapped persons who need to purchase the required support services.

Widows' Pension – The cost per case has been decreasing. This could be because more women are working, and thus have their own incomes or pension plans.

## B. Family Support Services

Child Care – As more and more women enter the labour market, and as single-parent families become more numerous, there will be an increasing demand for appropriate infant and child care. Funding priorities will focus on helping low-income families obtain child care services. Both public and parental interest in child care is expected to increase, with interest and advocacy groups becoming more vocal. Thus, a continuing trend will be the greater emphasis on attaining and maintaining acceptable standards of care for centres and child care workers.

Prevention of Family Violence – Communities are becoming increasingly aware of and involved in responding to family violence matters. Pressure will also continue to be applied by both the victims and abusers who are seeking help. There is increasing interest in moving beyond facility-based responses to prevention and treatment. There is also increasing recognition of the unique needs of Native, immigrant, and rural/isolated families. With the aging population, it is expected that elder abuse will be a growing interest as we move into the 21st century.

Women's Emergency Shelters – Awareness of the existence of these shelters is increasing, resulting in a greater demand for the services that these facilities offer.

## C. Services to the Handicapped

There will be a continuing movement towards community-based vocational training and more independent, supported living arrangements for the handicapped.

## D. Child Protection Services

There is a movement away from residential-based care towards community-based services. Social support is provided to families to ensure that the least intrusive alternative is employed while ensuring the protection of children.

There are more adoptions of "special needs" children now, as fewer children are being placed for adoption, in general. Native Albertans are assuming greater responsibility for the delivery of care to their people, especially in the area of child welfare. The role of the Foster Parent is evolving from that of volunteer status to that of a paraprofessional provider of services. Child Welfare is becoming a more legalistic system, with greater accountability to the courts.

# DEPARTMENT OF
TECHNOLOGY, RESEARCH AND
TELECOMMUNICATIONS

# INFORMATION TECHNOLOGIES TO THE YEAR 2000

## A. Global Trends

By the year 2000, the technological advances that will be most felt by Alberta's municipalities will likely be in the area of information technologies. Information technologies encompass the separate, yet increasingly inter-related areas of computers, telecommunications, broad-casting and distance education. Innovations in these areas influence the way we work, learn and spend our leisure time. They will continue to exert some influence on all these aspects of everyday life well beyond the year 2000, with important consequences on the social, cultural and economic dimensions of our society. These changes are by no means negative. It is crucial, however, that Alberta municipalities be aware of the changes to come, in order that they be successfully managed and synthesized into the role played by our municipalities.

### 1. Computers

Computers have come to typify the way in which technology has affected our society in the past 20 years. Their proliferation and flexibility in terms of applications, and ongoing innovations in computer technology will likely keep computers in the forefront when we seek some sort of benchmark to gauge our technological progress.

The proliferation of computers that has been in steady progress since the mid-1970's is expected to quicken in the future due to two dominant factors: advances in technology and inter-firm competition for markets. On the technology side, the availability of cheaper, and easier to use computers that can communicate with greater ease with one another and that can be applied to a more varied set of applications will assure that people will be able to use computers in more everyday tasks. The affordability and availability of computers will depend on competition between those firms in the industry. In the market for personal computers (pc's), the number of hardware and software firms is stabilizing, and those leading edge firms, having survived the competitive shake-out of the last ten years, are pursuing further innovations to solidify their market presence. Hardware manufacturers are making more user-friendly products, pursuing fourth-generation computers, and are trying to expand their sales in order to gain larger market shares and reduce per unit costs. Software producers are beginning to standardize their respective languages, and are attempting to make their languages more compatible with each other. Taken together, it can also be expected that these firms will try to expand their market share by creating new markets; i.e., by going beyond the more specialized and technical markets of today.

As computer technology evolves, home applications will follow those for industry, business and government, and are expected in a later period of, perhaps, 25–30 years. The emergence of more advanced expert systems, and voice-activated systems are also anticipated to spur greater residential applications.

Some forecasts predict that by the year 2000–2010, a computer is likely to be found in every household. Computer application will take one of the following broad forms: individual use, where the computer performs tasks such as inventory accounting or monitoring building systems without any sort of links to other computers or networks outside the home or business; and network-based activities, where the computer is tied into a system that monitors activities like commodity market prices, stock exchange activities, as well as performing functions with one's bank or with certain commercial operations such as retail stores or suppliers. With this proliferation of computers, a rise in "telecommuting" is also expected. Telecommuting will allow white-collar workers to work from their homes via a computer network, instead of having to show up at the office each day. In telecommuting households at least two computers per household are expected, one supplied by the employer and one pc for private family uses.

The expected large increase in computer literacy over the next 25 years will significantly change user expectations of how technology will fulfill individual needs. Computer technology will have to advance further while becoming more user-friendly in the process. To date a major obstacle to the increased use of home services such as telebanking is that usable terminals are not yet available in sufficient number for applications in the home. In rural areas, the continued existence of party lines and the absence of significant digital switching capabilities in telephone exchanges have also proven an obstacle to greater computer usage and application.

## 2. Telecommunications

Many U.S. analysts predict that no major breakthroughs in telecommunications technology are expected in the next 25–30 years that are likely to be applied in the home. The major technologies — fibre optics, voice recognition, Integrated Service Digital Networks (ISDN) — are already available, and are constrained only in the level and timing of their applications in the residential environment. Changes, therefore are not expected in basic technologies, but rather in how these technologies are supplied to the various services offered by telephone companies.

New service concepts are expected to develop major increases in needs for data communications, and possibly even a second telephone line for most homes, especially as computers become more commonplace in the home. In the U.S. for example, it is estimated that a third of all telephone access lines will have data requirements by 1995. Needs for video and image processing are also expected to increase significantly. Reflecting the increased demand put on the line capacity of telephone companies has been the growth of ISDN and fibre optic technologies. Not only have applications of these two technologies been brought on by computers, they will further the proliferations of computers as well. As telephone companies move towards an all–digital system, the merging of computer and communications and the growth in fibre optic transmission, will both contribute to greater residential computer applications. It is expected that fibre optic cable will be able to deliver telephone services economically to homes by 1990 in the U.S., and between 1992 and 1995 in Canada. Between the years 2005 and 2010, 70 to 75 percent of homes could have fibre optic telephone lines. On the demand side also, three factors will help accelerate the demand for new telephone services in the home:

- computer literacy;
- changing job patterns; and
- demographics.

## 3. Broadcasting

Broadcasting in the years 2000–2010 will likely be characterized by a greater offering of programming services offered through relatively newer technologies such as fibre optic cable, satellite and Microwave Direct Signals (MWDS). Program content is likely to have a greater share of Canadian content, based on recent trends and given the continued efforts of the federal government to encourage greater Canadian production and programming.

The most significant technological change in broadcasting will likely be the introduction of High-Definition Television (HDTV). HDTV has 1125 horizontal lines per screen, as compared to the 525 lines of regular TV sets. Because HDTV signals require a wider band of the wavelength spectrum than conventional broadcast signals, they can only be received through fibre optic or satellite systems. Proliferation of HDTV as it becomes more available and affordable is, therefore, dependent upon the rate at which fibre optic lines are installed by cable companies or on the availability of satellite receiving units owned by individual Albertans.

4. Distance Education

Advances in computer and telecommunications technologies will continue to impact on the methods of delivering distant educational services. Present methods of distance education include components from various technologies, and provide three basic capabilities. First, there must be some form of hard copy transferability between the student and the instructor (e.g., the mail system, computer transfer, teletype or facsimile). Second, some form of interactive capability between the instructor and student is needed (e.g., telephone link or teleconferencing with or without a video link via cable or satellite, and computer conferencing through either data or interactive data-voice configurations). The third component is access to materials and information resources (e.g., through the mail service, television or direct computer access to online databases).

Due to changing demographics, and the increasing importance of education (as outlined in Advanced Education's paper), distance education will likely become a more prominent component of Alberta's educational system by the 2000. The application of new technologies though will affect the form and way in which distance educational services are offered. The proliferation of computers, for example, will result in a greater use of them in the provision of distance education. Changes in Alberta's telecommunications infrastructure, such as greater use of fibre optic lines, will similarly affect the interactive nature of distance education in the year 2000.

## B. National Alberta Trends

The global trends identified above will likely affect Alberta in the same way as any other jurisdiction, with the possible difference of timing. New developments such as enhanced phone services that are usually introduced in larger centres, often take longer in spreading to smaller centres and rural areas. The crucial factor in information technologies being applied and eventually becoming more important in everyday life and business, is the capacity of the telecommunication infrastructure to handle new services such as digital-voice networks, increased computer capacity and an increased variety of entertainment media.

Of these three information technologies, telecommunications seems to be the key to which computer and broadcasting — to differing degrees — depend. New technologies often follow "Say's Law"; which states that supply creates demand especially in the central field of telecommunications. As telecommunications carriers innovate, and increase the capacity of their physical plant, it is likely that new services (like those mentioned above), will become more available.

To date, Canada and Alberta have kept pace in applying information technology innovations. The proliferation and variety of computer applications in Canadian industry is relatively on par with other industrialized countries, despite the fact that the vast majority of this technology is imported.

In broadcasting, a variety of technologies exist and are widely used. Cable TV for instance, is much more widely used in Canada than perhaps in any other jurisdiction in the world. At present for example, an estimated 66.6 percent of all Alberta households are basic cable subscribers. The use of satellite reception technologies, especially in rural and isolated areas of the country, is similarly widespread.

In the area of distance education, Alberta has a strong base of technological tools in place in our education system, including 27,000 microcomputers, and a government agency (The ACCESS NETWORK) for the acquisition, production an distribution of multi-media learning resources.

Given the physical characteristics of the nation and the province, communications over vast distances has always been, and will continue to be, vital. Telecommunications technology is perhaps Canada's (and Alberta's) strongest suit among information technologies. One of the world leaders in telecommunications technology and equipment — Northern Telecom — is Canadian-based.

The telecommunications infrastructure needed for the proliferation of other information technologies is present in an especially strong form in Alberta. For example, Alberta has always been in the forefront in applying cellular telephone technology. As a result, Alberta will not face a game of playing "catch-up" as information technologies begin to figure more prominently in everyday life.

These developments will likely affect Albertans in different ways. Urban Albertans could be most dramatically affected by computer developments such as telecommunicating, due to the concentration of white-collar workers in the urban centres. Rural Albertans could find that their perceived insularity from the centres is reduced. For example, communicating with one's bank in the city or ordering goods via a computer account could become the norm in 25 to 30 years' time. Increased communications through computer networks could produce a centralizing-type of force that would see more rural commerce conducted from larger urban centres.

### C. Trends Related to the Mandate of Technology Research and Telecommunications

The Department's mandate is to promote the research, development and commercialization of science and technology, the application of new technology to existing and new industries, and the creation of new employment opportunities arising out of technology development within Alberta. The

Department also assures that public policy supports a high quality affordable communications system for all Albertans, and works to create an awareness and understanding among Albertans of the economic, social and environmental benefits of advanced technologies.

A number of programs have been initiated to ensure that the province's telecommunications infrastructure meets both the present and future requirements of this users. The province has committed $500 million towards the Individual Line Service (ILS) and Network Modernization program in rural Alberta. In this way rural residents will have a private, dedicated line for digital-voice and data uses (in a way which was inconceivable with party lines) and will have access to products and services already available in major urban centres.

Through a separate program, Alberta Government Telephones (AGT) is modernizing 300 telephone exchanges to digital technology, which will bring telephone customers a higher degree of network reliability and the ability to transmit high-speed data.

As new technologies become available in the future, it will remain Technology, Research and Telecommunications' responsibility, in conjunction with AGT, to ensure that the communication technologies available to Albertans are of comparable quality (if not better) than those available elsewhere.

## D. Trends Related to Municipalities and Counties

The trends in information technologies described above will have a minimal degree of impact on Alberta's municipalities and counties in terms of local government.

Applications of computers, for example, are usually undertaken by individual businessmen as they see fit, and are of little direct concern to municipal or country councils. Outside of the City of Edmonton, with operated its own telephone company, 'Edmonton Telephones', the crucial element of telecommunications infrastructure is the responsibility of the provincial government through AGT. Similarly, the delivery of cable and satellite broadcast signals are also outside of the direct involvement of the councils.

Since access to comparable "state of the art" telecommunications services will be vital to the growth and diversification of municipal and county economies, what will be of concern to municipal and county administrators will be to ensure that services received by cable and telecommunications companies offer their respective jurisdictions comparable levels of access and services as found in larger urban centres. For example, Albertans outside of the larger urban centres may have greater difficulty in receiving HDTV because of the higher cost of installing fibre optic cable delivery systems in smaller centres. A similar problem may occur when the installation of fibre telephone lines to individual homes becomes more economically feasible on a larger scale (though this will likely be a problem of timing rather than direct costs). The long-run absence of fibre optic linkages will likely inhibit the development of certain distance education methods, especially computer conferencing through simultaneous data voice links.

What will be important for municipalities and counties wishing to influence the introduction and degree of access to new information technologies and enhanced service offerings is their respective size and level of commercial diversity and sophistication. The size of a community and the number of cable subscribers will obviously have some influence on cable companies in their decision and when to upgrade their physical plant in municipalities and counties in order to provide HDTV. Similar consideration might also be considered by AGT in regards to the timing and urgency of enhanced service provision to municipalities and counties.

The degree to which such lags in the application and availability of information technologies will affect municipalities and counties will also depend on how much use residents will get out of such services. Where the use of individually-owned satellite receivers is widespread, the unavailability of an infrastructure capable of handling HDTV may not be of such great concern. With telecommunications and computers, however, demand for new service innovations will largely depend on the general level of computer literacy among residents and demand from businesses, coupled with the demand for computer data-voice interaction in distance education.

There is no doubt that enhanced telephone services and access to computer networks is an indispensable tool in improving business productivity. This will be especially so as computer proliferation continues. To maximize such benefits, it is contingent on municipalities and counties that their school systems adequately prepare their students with adequate computer skills. Without a basic degree of confidence and competence with computers, the residents of Alberta's municipalities and counties in the year 2000 will find that opportunities afforded by information technologies may not be maximized. With proper education, and a requisite level of demand and interest, the predominant concern for municipalities and counties in the year 2000 should only be that of access to enhanced services.

# DEPARTMENT OF
TOURISM

# TOURISM

Tourism is the third largest industry in the province of Alberta. Worth $2.3 billion annually, the tourism industry employs 100,000 Albertans. By the year 2000, the industry is expected to reach revenues of $10 billion and to employ 220,000 Albertans.

The Alberta tourism industry will face particular growth opportunities over the next 11 years. In order for the industry to reach its targeted goals, more tourism development is required.

This requirement is recognized and is, in fact, a major focus of the Alberta Government's five year tourism strategy. The trend will be toward a more decentralized tourism industry with greater activity in all corners of the province.

The development approach is that of a ground-up approach, whereby local tourism industries will lead in identifying opportunities for the future. A formalized planning process is available through the Community Tourism Action Plan. By identifyinig its tourism assets and tourism concerns, a community sets goals for increased economic revenues and greater economic diversification through tourism. Community tourism goals cover a wide range of activities, i.e. main street beautification, hotel/restaurant development, new recreational/cultural facilities, improved signage.

Most of Alberta's communities and municipal groups are involved in the Action Plan process which can be expected to increase land usage for the purpose of tourism. Renewed commitments from the provincial government also reflect a trend toward increased acquisition or loan of crown lands and greater infrastructure development (access roads, water and power to sites).

Planning at the local level follows a multi-layered process which involves the community members, the private sector, and local officials. Once the Department of Tourism has registered a Tourism Action Plan, the community can apply for funding of its capital development projects through the Community Tourism Action Program. The Program makes $30 million dollars available over 5 years, ending in 1993.

The Community Tourism Action Program matches every 25 percent of local funding with 75 percent of provincial funding, for an approximate $40 million dollars in direct investment throughout the province. The program is intended to further leverage the available dollars by heavily encouraging private sector investment.

Regional tourism goals are also encouraged at the local planning level. Through the Team Tourism Marketing Program, Alberta's 14 tourism zones will promote the various regions of Alberta as independent tourism destinations. With the provincial government contributing $20 million dollars over five years on a 50–50 cost-shared basis, this program will tie closely into local and regional development. Communities and individual operators will work with the zones to comprise the marketing package for Team Tourism.

The next stage in the tourism strategy addresses the construction of major provincial and regional tourism opportunities that will attract out-or-province tourists. Based largely on local development initiatives and province-wide economic goals, these generators will increase the tourism development base throughout Alberta.

Emphasis will be placed on infrastructure development and destination planning with the assistance of the private sector. This will significantly increase the importance and numbers of tourism-related service businesses, the accommodation sector, restaurants, etc. Destination planning will involve integrated attractions that appeal to a wide range of visitors and will serve to extend the length of a visitor's stay.

'Family Vacation Destination Resorts' will be one such development that can be applied to various regions in the province. These resorts will encompass the full range of hospitality and tourism activities around a golf course or similar facility: camping and RV areas, commercial facilities (grocery stores, gift shops), tourism information centres, ball diamonds, hotel accommodations, heritage facilities.

Major provincial tourism generators will serve to promote and preserve Alberta's cultural, recreational and heritage resources. Private sector development will complement these facilities and will benefit from the increased national and international tourism activities.

Particular opportunities will be opening up in northern Alberta before the year 2000. Many developments will be initiated as early as 1989. The development of major tourism attractions will capitalize on the abundance of natural and heritage resources in northern Alberta.

# DEPARTMENT OF TRANSPORTATION AND UTILITIES

# TRENDS AND IMPLICATIONS

## A. Overall Economic Growth

### 1. Trends

The Alberta economy is heavily dependent on products affected by market and other forces beyond our borders (e.g. energy, agriculture), resulting in a cyclical growth pattern. The adjustment to soft prices this decade has made the private and public sectors leaner and better able to cope and plan in an environment of continued uncertainty.

The trend to diversification both in products and markets within the traditional energy and agriculture sectors and in the service and manufacturing sectors should contribute to greater stability in the longer term. Deregulated prices, markets and freer trade enhance these opportunities. This is already evident in, for example, strong natural gas exports and petrochemical developments at a time when oil prices are weak. Diversification into tourism, forestry and high technology is also building new strengths in the Alberta economy.

Alberta traffic trends have basically paralleled the general economy. Traffic volumes rose steadily from 1976 through 1981, dropped from 1981 to 1984, and have slowly recovered, approximating the growth in the economy.

Forecasts of the near term indicate continued uncertainty. The long term trend for economic and population growth in Alberta is positive, although expected to be cyclical. As well, regional and local differences in growth rates can be anticipated.

### 2. Implications

The Provincial Government has dealt with economic and budget uncertainty and change for several years. Budgets have been reduced and departments downsized, required enhanced efficiency in program delivery and spending.

Privatization of government services was expanded in an effort to stimulate the private sector. Other fiscal tools have also been used to finance priority government programs: the savings in the Heritage Fund have helped stabilize the budget; user fees and taxes have been looked to as revenue sources and dependence on non-renewable resource revenues is declining; budget deficits have been financed by market borrowings.

Uncertainty in the upcoming years will continue to pose a major challenge for the provincial government. Further, the federal government's debt will constrain its ability to use fiscal tools to stimulate or stabilize activity in the west.

Employment-generating development in the resource and other sectors require good public access. Funding for transportation infrastructure must compete with other demands on the public purse at a time when financial resources available to the province continue to be constrained. With budgetary limitations, expenditures on upgrading roadways in areas already well served by the existing system have to be priorized against major expenditures to service new areas of growth potential.

Planning criteria which measure economic benefits can be expected to be given increasing weight in priorizing projects for budget purposes. This will also be the case for those utility investments supported by government programs.

In the longer term, the rebuilding of existing infrastructure is expected to assume a growing proportion of resources available to Alberta Transportation and Utilities. Systems completed in the period of rapid growth in the 1960's and 1970's require major expenditures on rehabilitation. New technologies to extend the service of systems will be fully explored. Rebuilding requirements will require a major, long-term budget commitment and will compete with other infrastructure priorities for a share of the annual budgets.

Like the provincial government, municipalities will also need to continue planning transportation and utility expenditures in a climate of fiscal restraint and uncertainty in the near term. The challenge of maintaining efficient and effective programs and efficient methods of program delivery in times of uncertainty may lend itself to various options, e.g. evaluation of programs, increasing emphasis on user pay principles rather than reliance on uncertain government revenues, long-term planning. The usefulness of long-term plans and criteria that can assist in identifying upcoming requirements and setting priorities is not negated by this uncertainty.

## B. Oil and Gas Sector

### 1. Trends

Continued change is predicted in factors influencing investment in the oil and gas sector over the next 20 years.

Firstly, although oil prices have been soft and there is little likelihood of significant strengthening in the near term, the medium to long term outlook for energy megaprojects in oil sands mining and heavy oil upgrading remains positive. As Canada's conventional oil resources are depleted, industry and government are increasingly looking to non-conventional resources for security of supply. While this is positive in Alberta, the actual timing of developments is dependent on energy prices determined by market forces beyond Alberta's borders.

Secondly, with the advantages of deregulated markets and prices, Alberta gas and petrochemical industries face an encouraging future.

Thirdly, although the petroleum era is not expected to disappear within the next 40 to 50 years, concerns at the national and international level about the environmental impact of fossil fuels will influence development in the energy sector. Legislation has already been passed in the United States which may increase demand for alternate sources of energy and fuels for vehicles (see Section H). This influencing factor may result in flexible-fuel vehicles. As alternate fuels are developed and consumed, the development of non-renewable resources may be slowed or new opportunities may arise for expansion into these alternate fuel markets.

### 2. Implications

Continued change in the energy sector implies the need for provincial and municipal governments to build flexibility into their planning for the future.

Large energy projects, megaprojects and the population growth associated with them have an important impact on local and regional traffic growth and patterns, and on municipal water and sewer requirements. They present a planning and financial challenge for provincial and municipal authorities to ensure that the road and utility infrastructure are in place to accommodate the construction and operating phase. Infrastructure development requires significant lead–time and coordination among governments and with private industry.

A long term shift to alternate forms of energy may also slowly impact the economic base of the province. As this occurs, a changing geographical distribution of where people live and work could result in the need for upgrading existing roadways or in development of new roadways to serve developing areas.

## C. Tourism Sector

### 1. Trends

The tourism sector is one of the most promising growth sectors of the Alberta economy. Expansion in the industry is expected due to increased provincial government initiatives, federal–provincial support through the five year $56 million Canada – Alberta Tourism Industry Development Agreement, favourable exchange rates, and growth of a wealthy, healthy and mobile retired and semi–retired segment of the population.

### 2. Implications

From a transportation perspective, increased tourism will result in requirements for new roads to serve new recreation areas, and the upgrades to existing roadways to accommodate traffic growth. Roads constructed to facilitate development of other sectors e.g. forestry, oil and gas, will also provide access to new recreation opportunities, many of which are in the adventurer/sportsman category. These roads may have to be build to a different standard to accommodate both tourists and industry.

Growth in tourism will also imply increased demand for rest stop areas, highway turnouts, and roadway information. The latter may be enhanced by the creative use of information technologies.

Growing tourism traffic will impact infrastructure requirements in municipalities along major tourist corridors and in tourist destination areas.

## D. Agricultural Sector

### 1. Trends

The agricultural industry is expected to remain unsettled over the next few years. The trend toward grain self-sufficiency on a global basis, combined with the current crop subsidies in many countries, will result in continued competition for wheat producers. This suggest that shifts may occur in Alberta to enhance either efficiency in total production tonnages or to diversify production into other crops. Efficiency enhancements have already been realized by increases in farm size and this trend is expected to continue. Diversification is aided by the expansion of irrigated acreage in Alberta and by research and development in the agricultural sector.

Also expected to continue is the long-term trend to fewer crop delivery points. Fewer and more efficient grain elevators and an ongoing rationalization of unprotected branch rail lines can be anticipated.

### 2. Implications

A continuation of the long-term trend toward the consolidation of grain handling facilities will favour more trucking of crops over longer distances.

The effect on roadway maintenance is unclear due to two factors. First, it appears that even a doubling in the present pace of delivery point consolidation would not have a dramatic effect on traffic on Alberta roads. For example, it is estimated that, in a typical situation, roads leading to a consolidated elevator location would experience less than a four truck-trip-per-day increase on an annual basis. Some specific roads may, however, experience a greater impact. Second, the number of trucks and the weight of their loads are not solely responsible for roadway wear and tear. Other important factors are the number of axles on the truck and how the load is balanced over the axles. Improving truck axle configurations and load balance can mitigate the impact of increased loads.

A continued trend to the consolidation of delivery points will influence local population distributions and growth. The demand for municipal infrastructure will, therefore, be affected.

Alberta has potential for expansion of agriculture into frontier areas. Servicing of these areas with public infrastructure carries significant costs and may result in the search for cost-saving options. One option for reducing road development costs might be the construction of local road access in a two mile by two mile grid, instead of the traditional two mile by one mile grid.

## E. Forestry Sector

### 1. Trends

Alberta's forest products industry has grown significantly and this trend is expected to continue in the upcoming years. Alberta's favourable position in terms of accessible, uncommitted forest resources is enabling the industry to take advantage of increased global demand for paper products.

### 2. Implications

Like large energy projects, forestry developments have a significant impact on the provincial and municipal infrastructure requirements. These projects are located in the less populated areas of the province and may necessitate the development of new all-weather public roadways and new bridges, implying major provincial investments. Pressures for relaxed weight restrictions, upgrading of secondary roads and roadway intersections to accommodate the sweep of longer trucks, and access to new truck rest stop facilities can also be expected.

Municipalities are challenged with planning for roadway and municipal water and sewage requirements to accommodate new plants and associated population growth. Municipalities also face the task of developing and implementing land use controls which will aid the growth of the forestry sector without adversely affecting existing development patterns.

## F. Demographic and Social Changes

### 1. Trends

Lower population growth rates are expected for Alberta over the 1989–1999 time frame. Compared to a population growth rate of 2.9 percent in the 1970s, average annual growth in the 1990s is expected to average about 1 percent. This is due to lower fertility rates and lower in-migration associated with a more slowly growing economy.

Another trend is the aging of Alberta's population. In 1986, about 11.5 percent of the population was over 60. By the year 2016, this percentage is projected to grow to approximately 20.9 percent.[1] The average annual growth rate in the 1990's for Albertans over 60 is expected to be just over 3 percent, while, as noted above, the population as a whole is estimated to grow at about 1 percent.

In addition, the shift in population from rural to urban centres is expected to continue. The rural share of Alberta's population is forecast to decline from 23 percent in 1981 to less than 14 percent by the year 2000, with a net decrease of 92,246.[2]

This shifting demographic pattern is primarily due to the continued long-term trend to larger farms, consolidation of delivery points, and the spin-off effect of small agricultural service centres. As well, employment growth is expected to be in the service sector in urban areas.

A number of other social trends are anticipated to continue. These include smaller household sizes, an increase in single parent families, and continued participation of women in the labour force.

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[1] Alberta Treasury Bureau of Statistics. Population Projections for Alberta 1987 – 2016. Series 5 Projection. May, 1988.

[2] Government of Alberta. Caring and Responsibility: A statement of Social Policy for Alberta. 1988, p. 17.

## 2. Implications

Lower population growth than in the boom period of 1979 – 1982 is delaying the need for additional transportation and utility infrastructure capacity in many areas. Declining rural populations will change traffic patterns and reduce demands on rural roadway systems, but may also reduce the feasibility of major government investments in these systems.

The growth of major urban areas will be accompanied by increasing traffic volumes within and between centres, and growing requirements for network additions and upgrading, as well as the development of alternatives to the private automobile to relieve congestion (e.g. transit, rail). Utility infrastructures will also be impacted by growth.

As a municipality's population increases, requirements for transportation and utility infrastructure often do not grow incrementally but in a step-wise manner: e.g. when capacity of a roadway or water and sewer system is reached, a major investment must be made to upgrade the system, or put in place a new system or service. Governments need to develop long term strategies in order to be well positioned, in both financial and planning terms, to implement these changes.

Public investments in infrastructure, however, are not the only option available to accommodate increased traffic volumes. There is growing recognition that techniques for operation or management of roadways can be cost effective in extending their capacity: examples include the co-ordination of traffic signals, the removal of parking or other impediments to flow, better channelization of traffic, special lands for high occupancy vehicles, and user or parking charges. Similarly, creative financing options could help the public expense of financing capacity additions: private sector or joint public – private investments.

With the trend toward an aging population, the province and municipalities will have to continue to take into account of the special needs of senior citizens as drivers of motor vehicles and users of public transportation. Strategies and programs to support public transportation needs of the elderly and handicapped, e.g. in the more rural population centres, will need to be developed.

Planning for an aging population will affect road geometrics related to stopping distances and roadside signage. Special delineation posts, wider centrelines and edgelines which are more reflective have been designed to make night driving safer. This is particularly significant because as drivers age they require proportionally more light to see in the nighttime. The basic difference between daytime and nighttime sight is a loss of peripheral cues that are normally available in the day.

As both urban and rural populations age, such issues emerge as: How will travel patterns change? Will the distribution of trip types (e.g. more recreational trips) change significantly? Changes in trip purposes affects not only traffic flows on roadways, but also the peak demands on that roadway.

## G. Roadway Infrastructure and Operation

### 1. Trends

An important trend already evident in some Canadian jurisdictions, is the shift in emphasis from new construction and the extension of the paved network, to rehabilitation and maintenance of the existing network. Capacity considerations aside, many of Alberta's roadways will be reconstructed during the 1990s. Much of the system built in the 1960s and 1970s will require rebuilding in order to maintain current levels of service. A similar trend is emerging with municipal utility infrastructure.

This trend implies a demand for significant public investment at all levels of government when, at the same time, Alberta may face demands for investment in new infrastructure to serve growing resource development areas. As noted in Section F, governments will need to explore a range of operational and financing options to keep public costs in check. New technologies will also provide additional tools for transportation planners.

For example, microelectronic technology enabling implementation of user charge systems is currently at the development stage and should be available by year 2000. Vehicle mounted "smart" cards, issued with the vehicle license, could be read by roadside sensors communicating with central computers. User fees could then be assessed according to the road used and the time of day, week or year. Operating in conjunction with automatic weight scales, this system would be able to factor weight into the user charge. Such charges could be used to generate revenues as well as to manage congestion and use of the system.

On the maintenance side, widespread use of multi-layer polymer/epoxy bridge surfaces to reduce salt damage is foreseen. Practical application of biotechnology advances, such as planting slow-growing grass requiring less frequent mowing, can also help reduce costs.

Dramatic changes in roadway design standards are not expected although technological enhancements in construction techniques and materials may be developed. Some modifications of present technologies in roadway construction may be required to match the changes in heavy vehicle technology. For example, the increasing use of concrete on heavy truck routes is foreseen.

## 2. Implications

Municipal as well as provincial resources will have to reflect the shift in emphasis from new construction to rehabilitation and maintenance of existing roads. Governments will need to continuously monitor technological advancements in design, construction, and operations in order to identify and apply cost effective solutions.

While technology may open the door to sophisticated user pay systems, provincial and municipal governments will have to make policy decisions whether to implement such systems. As this would put the financing of transportation infrastructure on the same footing as water, electricity, etc., it would be a departure from tradition in this country.

## H. Vehicle Design and Operation

### 1. Trends

The most dramatic technological improvements in vehicle design and operation involve computer technology. Other trends have been noted in trucking, intercity buses, fuel efficiency, and alternative-fuel vehicles. These trends will lead to considerable changes in vehicle design and operation.

Whereas the 1970s and 1980s might be seen as decades of major discovery or development of computer technology, especially in micro-computers, the 1990s can be expected to usher in a myriad of practical, real cost-reducing efficiencies from the application of these information technology advances. We are early on the curve of receiving benefits from the information revolution.

The benefits might include:

- satellite navigational systems for monitoring truck fleet movements,
- providing electronic road-side and in-vehicle motorist information on traffic congestion, or road conditions,
- radar devices linked to vehicle braking systems, which can reduce vehicle headways (the space between vehicles) and increase system capacity,

- application of computer systems to automatically impose spring road weight bans, or identify the best route for overloaded vehicles,
- satellite-based highway surveying,
- intelligent braking systems balancing the application of the brake to each wheel on the basis of sensed resistance.

Regarding the satellite navigational system for truck fleet movements, such systems will provide location control for a carrier's fleet. Traffic flow, vehicle assignment, and routings will be supported and optimized by a central computer system. Each vehicle will be in voice and in-vehicle terminal communication with the dispatcher. Some shippers will have computerized access to vehicle location, and hence expected time of arrival of their shipments. Already a convenient mode, trucking will become more convenient but, in some instances, more costly than rail.

Also with respect to trucks and the trucking industry, there is reason to believe that the trucks of the future will be heavier, faster and longer and that the use of multiple trailer trains will be greater. Suspension systems will be improved. As rail costs may fall with the introduction of advanced rail technology, only truck load and size increases can maintain cost competitiveness of the road mode. The relative economies offered by the next generation of technology suggest that trucks may gain on the shorter hauls, or where convenience is the prime factor, but lose on the longer, higher density routes that parallel rail.

In the case of intercity or commuter buses, where increased capacity is needed, the most likely configuration is an articulated unit utilizing improved suspension and braking systems which provide the necessary high-speed stability. Such vehicles, with professional drivers and a dedicated right-of-way, could safely travel significantly faster than in mixed traffic.

Fuel efficiency could benefit from computer technology. Engine manufacturers will be making increasing use of electronics for more efficient combustion and reduction of engine speed. Computer control of engine and transmission will improve fuel economy, as will the use of ceramics and higher combustion temperatures within diesel engines. Each should provide a 5 to 10 percent improvement for highway vehicles by the year 2015. Another improvement in fuel economy could result from continuously variable transmission (CVT) units. Presently, CVT units are being manufactured and installed in some vehicles.

Related to improvements in fuel efficiency are improvements in tolerance for a broader range of fuels. With respect to passenger and transit vehicles, the 1970s were marked by long queues of motorists for high-priced gasoline, whereas the 1980s have brought oil gluts and low prices. Presently, public concern for ecology and oil security is promoting a switch from gasoline and diesel to alternative-fuel vehicles in the United States. There, legislation was passed recently granting automobile manufacturers incentives to produce alternative-fuel vehicles. Canada is contemplating similar legislation.

In addition to the above, new technologies such as super high-speed aircraft, high-speed trains, all-terrain vehicles, airships, and automated people-movers will also provide promising new developments in transport options.

## 2. Implications

Of key importance to provincial and municipal governments is to keep abreast of trends and to be in a position to accommodate changes that enhance transportation efficiency and economy. For example, the monitoring of trends in vehicle weights and dimensions and in other technological changes can help ensure that safety and other considerations related to tomorrow's vehicles are built into today's decision criteria on roadways.

Advances in satellite communication systems in the trucking industry will permit the tracking of the movement of dangerous goods, as well as provide better fleet management economics for the trucking industry.

Some technological improvements may reduce pavement damage and improve safety. Suspension improvements will mitigate dynamic loading and spread the load more evenly over the wheels. Microelectronics will enable resistance-sensitive skid control braking systems and automatic headway monitoring.

The use of advanced computers and technology in vehicle design and operation will continue to provide opportunities for improving productivity, and streamlining administrative operations. Challenges already exist and will accelerate, in retraining existing work forces to take advantage of new technological developments.

## I. Demand for Accountability

### 1. Trends

The Canadian public is increasingly demanding value for the funds investing in public programs, including transportation and utility infrastructure. This scrutiny can be expected to continue into the future as governments have less flexibility to meet public requirements with increased spending. The public will continue to pressure for more infrastructure and services without increases in expenditures or taxes.

### 2. Implications

There will be an ongoing need for provincial and municipal governments to evaluate programs and projects to measure how well they are meeting objectives and how efficiently dollars are being spent. Governments will need to target spending to programs and projects with the highest economic and social benefits.

Effective communication of upcoming and ongoing transportation and utility projects and programs may become a major vehicle to demonstrate accountability to the public.

## J. Environmental Issues

### 1. Trends

There is an increasing public awareness of environmental issues on global, national and provincial levels. As the province continues to urbanize and industrialize, pressure will be placed on governments to protect the environment while accommodating growth. The younger generations are more environmentally conscious and will raise issues related to the pollution of air, water and soil, waste disposal and transport.

Another environmental issue is the changing of weather patterns. Over the past few years, severe changes of weather patterns have occurred with increasing frequency and a general global warming trend has been observed.

## 2. Implications

In order to maintain and ensure safety, more stringent regulations may be imposed on the transportation and disposal of toxic wastes. The need to control water, air and soil pollution also may have implications for the cost of both transportation and utility infrastructure requirements. Municipalities will need to take advantage of technological enhancements to meet environmental standards and keep costs in check. Environmental issues highlight a dilemma that has to be addressed by the public and all levels of government: the determination of a reasonable balance between long-term environmental considerations and short-term economic gain.

If the global warming trend continues, the southern regions of Alberta may become more arid and there may be a northward shift in population growth and agriculture. Southern municipalities would face pressure on water and sewer infrastructure while the north could see a growing demand for new infrastructure.